INDIA RUBBER WORLD
FOUNDED 1889
CAOUTCHOUC
GUTTA-PERCHA
Reg. U.S. Pat. Off.
Reg. United Kingdom.

Published on the 1st of each month by

THE INDIA RUBBER PUBLISHING CO.

No. 25 West 45th Street, New York

Telephone—Bryant 2576

CABLE ADDRESS: IRWORLD, NEW YORK

Member of the National Publishers' Association

HENRY C. PEARSON, F.R.G.S., Editor

Vol. 71 March 1, 1925 No. 6

SUBSCRIPTION: $3.00 per year, $1.75 for six months, postpaid, for the United States and dependencies and Mexico. To the Dominion of Canada and all other countries, $3.50 (or equivalent funds) per year, postpaid.

ADVERTISING: Rates will be made on application.

REMITTANCES: Should always be made by bank draft, Post Office or Express Money Order on New York, payable to THE INDIA RUBBER PUBLISHING COMPANY. Remittances for foreign subscriptions should be sent by International Postal Order, payable as above.

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The "Dean" Passes

FORMER Governor Bourn, full of years and of honors, has passed to the Great Beyond. The dean of the rubber industry will be sadly missed but his memory will remain in many hearts for years to come. He was so simple, sane, and so thoroughly human in all of his attributes. He lived to great age entirely free from the cults and isms that are supposed to assure longevity. He was not a vegetarian, did not Fletcherize, did not do the daily dozen, never practised deep breathing. His life was regular, full of great activity and he spent no time upon symptoms. In fact, he lived the normal life of the normal man.

A particularly engaging quality was his constant and general friendliness. He liked people and was glad to have them around. He enjoyed banquets and social gatherings of all kinds. He always had plenty of time to respond to any invitation to do his part at any function. Nor did he neglect his own business. No manufacturer in his line gave it more thought. He was one of the first to reclaim rubber by the acid process. The present pressure cure used so generally by the trade had its first impulse in experiments that he personally carried out in his Providence factory. Added to these were scores of minor inventions directly applicable to his own mill that notably assisted in efficient production.

Nearly a century of life; three-quarters of a century of success and service.

The Mother of Plantation Hevea

A SHORT time ago occurred the Centenary of the Royal Botanic Gardens at Peradeniya, in Ceylon. The event attracted mild interest throughout Great Britain and as far as we know was not mentioned in the Americas. Nevertheless the work done in these gardens has been immeasurably helpful to the present day rubber trade. Almost from the founding, which occurred six years before the earliest manufacture of rubber goods, rubber producers were cultivated, studied and experimented with. In 1833, ten years before Goodyear's vulcanization patent, and while the Roxbury Rubber Co. was approaching its spectacular failure, occurred the first planting of rubber there. This was a great avenue of *Ficus elastica* trees that later became one of the notable sights in Ceylon.

Speaking of the Ficus, it was in this garden in 1875 that King Edward planted the *Ficus religiosa* that today stands as a leafy memorial to one of England's greatest kings. Not to dwell upon the marvelous collection of palms, bamboos and other beautiful trees from all parts of the tropical world but to keep our thoughts on rubber, it is well to recall the names of the scholarly directors, Thwaites, Trimen, Willis, Wright, Stockdale, and others. These with their assistants, botanists, mycologists and plant experts gave to the planting world not only the seeds of the *Hevea brasiliensis* but definite instructions as to planting, culture, collection and preparation for market. Still more important, their knowledge of tree diseases has saved the whole Hevea planting industry from destruction.

It is more than fitting therefore that the busy commercial world should pause and give appreciative thought to Peradeniya, one of the oldest, most beautiful, and most useful botanical gardens in the world.

Successful Management Sharing

THE ideal rubber worker is proud of his shop, his work and his bosses. But it must be admitted that modern industrial conditions, admirable as they are in so many ways, are scarcely calculated to develop exactly that type of a worker. Increasing standardization, larger use of automatic machinery, greater division of labor, and constant plant expansion, with consequent lessening of direct personal contact between employer and employed, do not enthuse the individual worker. True, the workers now fare far better than in years gone by. Their pay is higher, working conditions are safer, pleasanter, and more sanitary, insurance is provided for health, lives, and disabilities, generous bonuses are allotted, opportunities are afforded for salary saving and the buying of stock under market price, and more than ever are promotions made on the merit system. More valuable voluntary concessions have been made than have been those requested. Yet labor is restless, seeking greater reward, collective bargaining, and shorter working time, often without any regard for acutely competitive conditions.

Still the optimists do not despair of attaining lasting industrial tranquility. If the greater well being of both employer and employed is to be promoted and enduring peace established, such they claim can be achieved only through the application of methods more ethical than expedient. In short, the workers must be dealt with more fraternally than paternally. In proof that such a course is not only feasible but has well passed the experimental stage in large scale operations, they point to the unique experience of the Dutchess Bleachery, Wappingers Falls, New York, recently reviewed by the Department of Industrial Studies, Russell Sage Foundation, New York, N. Y.

At the establishment named a genuine effort was made to find a more democratic and more personal basis for human relations in industry, the result being the institution of a partnership and management sharing plan, which through three years' operation has transformed a poor, dilapidated mill town into a bright, enterprising community of cheerful workers with happy homes. Meanwhile the attitude of the operatives toward production has undergone such a salutary change that the company earned relatively high dividends during two years when other plants were idle through general depression. With the incentives provided, the operatives display seemingly as much zeal in limiting waste and increasing output as the proprietors themselves. Grievances are there conspicuous by their absence. Amicable relations were strikingly indicated by the workers joining the stockholders in electing the manager and superintendent.

The Dutchess Bleachery plan may not serve the needs of all rubber factories, but many may find in it features well worth appropriating "as is" or suitably modified. At any rate it or any scheme that might lessen the employing anxieties of rubber manufacturers merits earnest consideration.

Scotching a Rubber Coin Canard

RUBBER may often have been misused for base purposes by individuals, but to the credit of the nations it can be said that none has yet sought to debase it by minting it into filthy lucre. Recently a report gained currency that "porcelain tokens had been substituted by the Guatemalan government for hard rubber tokens." THE INDIA RUBBER WORLD, in the interest of truth and trade, sought official information on the subject, and through the United States consulate in Guatemala City learned that "neither hard rubber nor porcelain tokens have ever been used in Guatemala. The only coin now used is one of aluminum plated with copper." That should squelch the latest slander coined about rubber.

THE PLEASING PHRASES THAT WERE AN ADJUNCT TO the fabric-framed motor tire do not seem to be present in the balloon tire. Such happy lines as "Time to Retire," "Best in the Long Run," "Most Miles per Dollar," "Geared to the Road," and many others still apply. But would it not be opportune to add a few that are wholly and specifically balloony? As for example: "Bump Destroyer," "Road Smoother," "Ease Over," "Obstacle Eater," "Rock-a-bye," "No Jar," and so on?

IF ALL THE SKIDDING DONE IN THE UNITED STATES IN one year could be confined to one car it would be enough to ditch it in one of the canals on Mars when that planet is far from the sun, or to project it two-thirds of the way from the earth to the sun. Seems incredible, yet statisticians figure that every used tire is ground along the road, when the wheel is locked, about 35 feet a day or fully two miles a year. There are in the country some 15,000,000 automobiles, with 60,000,000 tires, not including spares. One-half of those tires will skid two miles apiece, thus totaling 60,000,000 miles. Small wonder then that so many tire factories are forced to keep so close to peak production, and that anti-skid tread designs are as thick as leaves in autumn.

THE DOCTORS ARE STILL PUZZLED AS TO WHAT A VITAmin is, how it works, and why it plays such a curiously important rôle in human nutrition. Indeed, our medical friends are having a lively dispute about it, but seem to be getting nowhere. The chances are that some rubber chemist will soon clear up the question by proving that the action of a vitamin in physiological processes is quite akin to that of a catalyzer or accelerator in a rubber mix subject to heat; that it is a sort of a chemical matchmaker, promoting activity and even inducing the "marriage" of dissimilar elements, yet obligingly fading out of sight when the fusion has been effected.

PROVE ALL THINGS; HOLD FAST THAT WHICH IS GOOD.—I Thessalonians, 5:21.

Railway Train Hose[1]

Annual Requirements of American Railways for Airbrake, Air Signal, and Car Heating Hose—Quality, Construction and Tests Specified by the American Railway Association—Typical Department for Manufacturing Short Length Hose—Steaming Tests for Car Heating Hose

THE most recent statistics indicate that the rolling stock operated by the railways of the United States comprises 65,332 locomotives, 54,719 passenger cars; 7,750 Pullman cars, and 2,347,588 freight cars. For their equipment with airbrake, air signal, and car heating hose it is estimated to have required the following: 5,950,000 pieces of airbrake, 255,000 pieces of air signal, and 255,000 pieces of steam hose. The annual replacement for new hose is estimated at 1,500,000 pieces of airbrake and air signal and 150,600 pieces of steam hose.

Basic Specifications

The manufacture of short length railway hose is a specialty in several of the leading mechanical rubber goods plants and has been highly developed by reason of the stringent specifications formerly issued by the Master Car Builders Association and now issued by the American Railway Association, Chicago, Illinois[2]. These specifications cover manufacture, tests, variations of dimensions, workmanship, marking, inspection and rejection of the hose. The technical qualifications presented for acceptance of makers from the regular cutting department located in another room.

The routine of actually making railway train hose has been worked out on a practical plan which insures rapid and workmanlike construction essential for the successful production of specification goods.

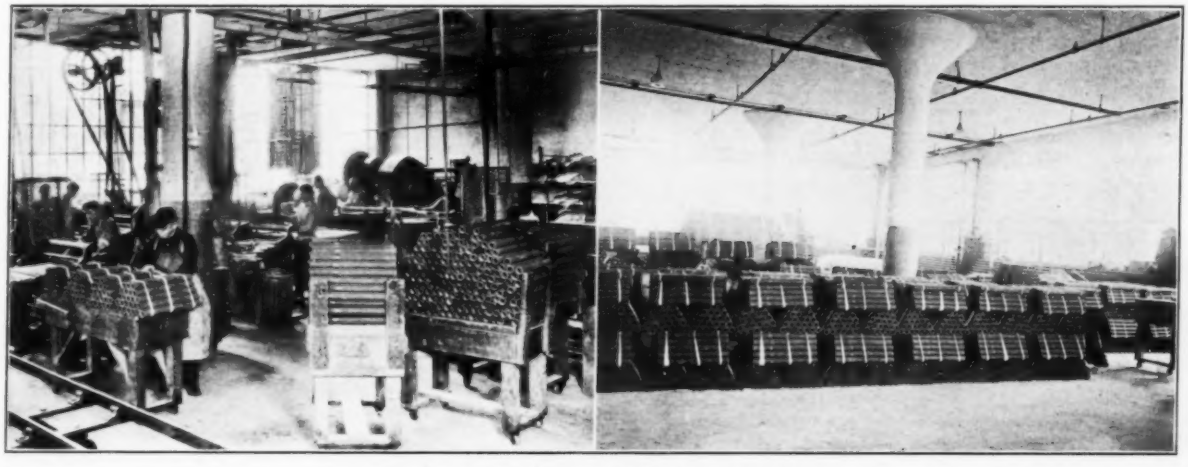
Quality and Tests

The qualities of stock for tube, friction and cover of specification railway hose are controlled by test requirements, as are also the construction and physical properties of each type of hose.

Tubes of airbrake and signal hose must have a tensile strength of not less than 800 pounds or more than 1,200 pounds per square inch, and their covers not less than 700 or more than 1,100 pounds per square inch. The elongation required is 400 per cent. 2 inches stretching to 10 inches before the test specimen breaks.

Porosity and Bursting Tests

Two tests of air hose of especial practical significance are those for porosity and bursting. Evidently the ability of air or signal



Airbrake Hose Making and Shipping Departments

these goods are very exacting and can be successfully met only by closely controlled manufacturing methods in a well organized department equipped for the work.

A well planned short-hose making department is shown in the accompanying illustration. The arrangement of this department on a unit basis is not only efficient but the plan allows extension to any desired increase of capacity without loss or delay. The plan includes a warming mill and tubing machine at one end of the area. From these the process of making and wrapping the hose proceeds to the vulcanizer at the opposite end. The supply of cut frictioned fabric required is brought to the

hose to retain the working pressure without loss or bursting is of prime importance, therefore tests are prescribed for porosity of the tube and for bursting strength of the hose itself. The first test is performed with internal pressure on the hose submerged in water and the cover cut through from end to end to permit observation of the escaping air if the tube proves porous under the pressure applied.

Following the test for porosity the bursting test is applied. First, under a hydraulic pressure of 200 pounds per square inch the hose is not to expand more than ¾-inch for airbrake hose and 11/16-inch for air signal hose nor develop any small leaks or defects. Following this test the same hose section must stand 500 pounds per square inch for 10 minutes without bursting or defects, after which the pressure is increased to 700 pounds per square inch, at the rate of not less than 100 pounds or more than 200 pounds per five seconds without bursting the hose.

[1] Data and illustrations from The Manhattan Rubber Manufacturing Co., Passaic, New Jersey.

[2] The specifications are: "Airbrake and Train Air Signal Hose Standard." Adopted, 1903; Revised, 1922. "Steam Hose, Recommended Practice." Adopted, 1915; Revised, 1923. "General Instructions on Standard Methods of Tests for Rubber Goods." Recommended Practice. Adopted, 1923.

Special Tests for Steam Hose

Steam hose for car heating is subjected to very severe service conditions which necessitate in their construction very exceptional qualities of materials withstanding deterioration tests before and after steaming both for tensile properties of the rubber parts and stiffening of the hose as a result of steaming.

With the above requirements in mind and the inevitable loss incident to rejections under these specifications one can appreciate that the making of railway train hose requires constant vigilance over quality of materials and construction.

Details of Manufacture

Although the specifications for train hose permit the use of either calendered or seamless tubes in their construction the usual practice is to employ seamless tubes produced on the tubing machine. However, the calendered tube has certain theoretical advantages which should be mentioned. As it is built up in two or more plies the effect of this construction is to minimize porosity and the possibility of pin holes in the built up sheet. These advantages are offset by the increased cost of cutting and making the tube from sheet and the liability of weakness in the tube seam and the method has been abandoned in all small hose construction.

Seamless Tubes

The equipment for producing seamless tubes in general comprises a modern tubing machine of ample power and reserve stock capacity to make delivery dependably uniform and easily controllable as to diameters and wall thickness.

A feature of practical importance in the production of seamless tubes for all hose is the preservation of the outer surfaces of the tubes free from the talc or soapstone which is customarily blown through them to prevent internal adhesion of the tube walls. A peculiarity of talc and soapstone is that it cannot be completely wiped or washed away from an uncured rubber surface. Its presence even in invisible amounts on a hose tube seriously impairs the attachment of friction coated fabric. Effective aids for tidy workmanship in this, and other regards, are particularly appropriate in a specification hose department and are applied in the one shown in the picture. Here as the tubes are run one scarcely observes the escape of talc from the short length tube as it emerges from the machine, yet its interior is dusted perfectly.

As soon as the tube emerges from the die onto the conveying apron for a distance of a couple of feet this length is cut by hand shears and an attendant lays it immediately in a rack of grooved shelving which protects it from injury while stored ready for poling after cooling.

Poling the tube is done at a bench by hand, the operator folding over in one hand an end of the tube as he slips the other end over the mandrel. The tube is then slid to place as it expands by the pressure of the confined air is it advances onto the mandrel.

Preparation of Duck Plies

Frictioned and skimmed duck for the fabric plies is delivered in rolls from the calenders to the cutting room. Here the stock is cut on the well-known vertical form of bias cutter and the duck blocks are spliced into strips ready for cross-cutting into hose lengths. On one edge of these blocks is applied a calendered rubber strip of proper width to serve as a cover for the hose. When complete the blocks are booked for delivery to the hose makers.

The Short Hose Making Machine

The machine for making short length hose comprises three rolls for forming the ply and cover construction. The top roll is raised and lowered upon the hose mandrel as the latter lies between the two lower rolls. One edge of the block of bias duck is laid over the poled tube. As the latter revolves between the rollers of the machine the duck block is wrapped tightly around the tube forming the covered hose. Upon the cover near one end a rubbered flexible metal label is also rolled.

At the rear of the making machine the hose is received by a workman who caps it at each end ready for wrapping. This is done by pressing the cover stock down over the edges of the duck plies into contact and uniting it with the tube stock by compression, cutting off at the same time the excess length of tube and cover. The tool employed for thus capping the hose is an ordinary hand cutting knife.

The specified train hose lengths are airbrake and air signal, 22 to 22½ inches; steam 24 to 24½ inches. These are maximum and minimum lengths. In manufacture these limits of lengths are maintained by removable metal rings pinned through the hose mandrel at the proper spacing for the required length. These rings also serve to finish the ends of the hose to outside diameter by furnishing a fixed stop to support the end thrust due to wrapping for curing.

Wrapping Machine

The machine used for applying the straight cotton wrapper is essentially the same as that used for making the hose. Full width heavy sheeting without selvage is used for wrapping without cross-wrapping strips because the specifications require the hose to be smooth and free of spiral markings.

Steaming Tests

Practical interest for every manufacturer of steam hose attaches to the tests recommended in the specifications of the Mechanical Division of the American Railway Association. These steaming tests are two, as follows:

Digester Test

The specimen shall be surrounded by dry saturated steam for 48 hours continuously at a pressure of 45 pounds, with a variation of 3 pounds either way. The sample shall be of such length that the test specimens used for friction, tensile strength, and stretch tests shall not be closer to the end than two inches. An examination of the section of the hose after being subjected to the heat of the steam will be made immediately after the removal from the digester and shall disclose no blistering of the inner tube or cover or loosening of the tube or cover from the fabric. After removal from the digester the hose shall be permitted to rest not less than 12 nor more than 18 hours before testing. However, if the sample is otherwise perfect and the fabric is water-logged due to improper steaming conditions, thereby causing a failure of the friction test, it will be necessary to repeat the digester test on another sample.

Rack Test

The test lengths of hose shall be applied to a rack and dry saturated steam at an average pressure of 75 pounds per square inch with variations of three pounds either way shall be allowed to pass through the hose continuously for two periods of seven hours each. An examination of the section of hose after being subjected to the heat of the steam will be made immediately after the removal from the rack and shall disclose no blistering of inner tube or cover or loosening of the tube or cover from the fabric. Between the first and second periods and between second period and time of testing, the hose shall be permitted to rest not less than 12 nor more than 18 hours.

Packaging Short Hose

After inspection and test the hose is ready for baling for shipment. The method of bundling short length hose is shown in the illustration which represents a packing room for these goods. Air and other hose is ordered in serial lots of 200 pieces, the label of each piece bearing the number of the serial to which it applies. Each full serial of 200 pieces is comprised in four packages of 25 pieces. One extra piece for test accompanies each serial. Following the successful test of this piece the bundles are burlaped for shipment.

Machine Method of Manufacturing Tennis Shoes

Mixing and Calendering—Gum and Fabric Foxing—Insoling—Frictioned Parts—Leather Trim—Vulcanized Crêpe Soles—Molded Soles and Heels—Spreading and Doubling Fabrics—Machines for Making Tennis Shoes

By K. C. C. R.

PROBABLY no branch of the rubber footwear business has witnessed more changes in processes and methods in the last few years than the manufacture of tennis shoes. This industry gained a wonderful stimulus as a result of high leather shoe prices in war time, saw the bottom drop out of it when leather shoe manufacturers came to their senses and went after the business they had lost, and finally has come back with a bang on the rebound. But it would be a mistake to assume that this remarkable recovery had been accomplished without the employment of the ingenuity of research departments and by dint of hard work by the production forces.

On the face of it, tennis shoe manufacture appears to be the least bothersome line, but footwear manufacturers who attempted to add a line of tennis as a side issue to fill in the dull season found that they had a few things to learn before they could turn out a quality product.

Mixing and Calendering Operations

In the mill room, the mixing and preparation of rubber compounds is accomplished in the same manner as in all rubber factories. The calendering operations can be classified as follows: (1) gum foxing or strip, (2) fabric foxing, (3) insoling, (4) friction, (5) leather trim, (6) crêpe outsole, (7) embossed and plain outsole. Included with these operations should be mentioned: (1) molding soles and heels, (2) spreading and doubling ducks and drills, (3) cements.

Gum Foxing

Calendering gum strip or foxing is one of the processes which has been greatly improved. This strip, which varies in width from one-half to one and one-quarter inches, is used as binder between the outsole and the upper. In high grade shoes it is used in conjunction with a fabric strip; in cheap shoes it is employed without any fabric. Until a few years ago, this gum foxing was run on a plain sheet calender into a wrapper or on an apron and placed on frames which were conveyed to the cutter's bench. Steel bars trued up to the widths of strip desired were used for cutting out the strips one half pair at a time. This cutting method was slow and expensive and manufacturers set out to find a better way. As a result of these experiments gum foxing today is cut on the calender, the sheet of gum passing under a row of circular knives which can be set for any desired thickness. The strips are then placed in books and sent direct to the makers. Still another development eliminates the use of books and rolls the cut strips into holland or non-sticking separator paper, so that the maker receives a roll of foxing, uses it in the exact lengths he desires, avoiding waste, and with the added advantage that the strip keeps tacky under the protection of the separator. It is such saving in labor that has made possible the reductions in tennis prices and the meeting of leather shoe competition.

Fabric Foxing

Fabric foxing is used on all high grade basketball shoes and first quality tennis shoes. This is run by frictioning heavy sheeting both sides and calender coating both sides with compounds of various colors to match the trimmings on the shoes. It is cut out with a knife and bar on the bias, at a 45-degree angle. If the sole of the shoe is to be put on outside the foxing it is necessary that the strip retain its tack, and the pieces are cut single ply. If the piping is to be placed outside the sole the stock is dusted with talc lightly on one side, plied up six or eight thick and cut out in the same manner. The necessity of cutting this material on the bias precludes the use of the gum foxing cutting method.

Insoling

Insoling for tennis shoes is made of a fabric of some sort backed up with a composition coating made of ground unvulcanized waste. Formerly leather was widely used, but owing to the problems of shrinkage, and charring in vulcanization, it has been generally discarded and various types of non-heat-conducting substances developed. Kendex, a felt product, and Korxole, similar to linoleum with ground cork filling, are widely used, and several manufacturers have adopted insolings of their own devising. Kendex is generally backed with a coating of rag, whereas Korxole, owing to the presence of oily substances, works better if given a spreader coat and backed with a piece of friction. This latter material has been improved in the last few years by the addition of a rough burlap back which takes the rubber better. Insoles for cheaper shoes are made of plain sheeting or napped sheeting and flannel dyed buff or yellow color to look like the more expensive insoles. Counter stock is also run from sheeting backed with rag, although in the high grade shoes more finely ground cotton fibers are used.

Frictioned Parts

Every tennis shoe carries a few frictioned parts, a filler serving as a binder between the insole and outsole, and a toe cap which is placed between the gum toe cap and the fabric to help withstand the scuffing at the toes. These parts are cut from heavy sheeting frictioned with a soft tacky compound.

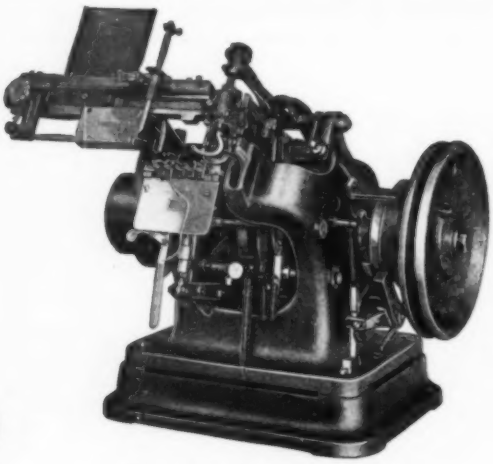
Leather Trim

Formerly all trimmed tennis shoes were furnished with stays and ankle patches of real leather. Competition necessitated the finding of a substitute so that rubber manufacturers produced an imitation leather made of rubber and fabric. This is made by taking a piece of light sheeting frictioned one side, and calender coating the frictioned side with a black, red or gray compound, which is afterwards impregnated with a wash to give it a gloss and remove some of the tack. This material is then vulcanized for a short time to make it workable and able to be stitched. It receives a second and final vulcanizing when the entire shoe is cured. This double curing process has proved expensive, however, and as a result a new imitation leather has been developed made with ground fiber or flox mixed with rubber which will stand stitching without the preliminary cure. This new trimming has the added advantage that it looks more like leather.

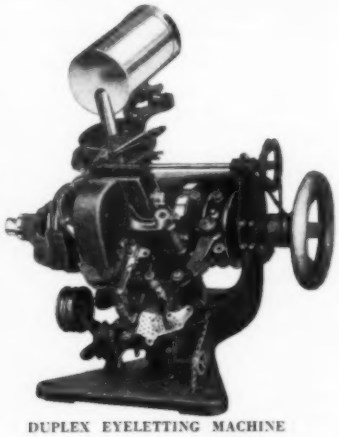
Vulcanized Crêpe Soles

Mention has already been made in an article outlining the line of tennis shoes for 1925 of the remarkable success of the vulcanized crêpe sole. This is a comparatively simple calender operation being run through without warming on a cold calender. Manufacturers are finding, however, that in laminating, better adhesion is obtained if plain sheet is used on the side which goes next to the shoe.

USMC TOP CEMENTING MACHINE—MODEL RB

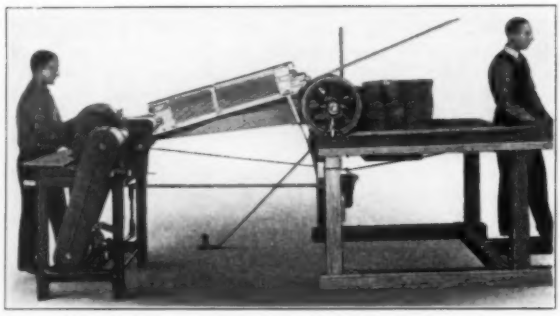


ENSIGN LACING MACHINE—MODEL B



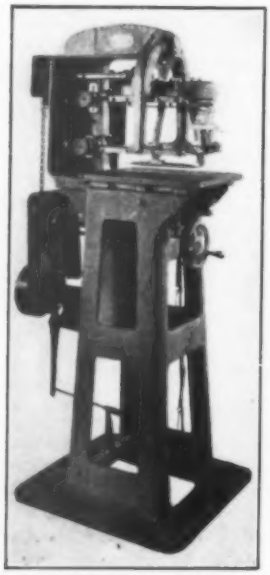
DUPLEX EYELETTING MACHINE

USMC OUTSOLING MACHINE

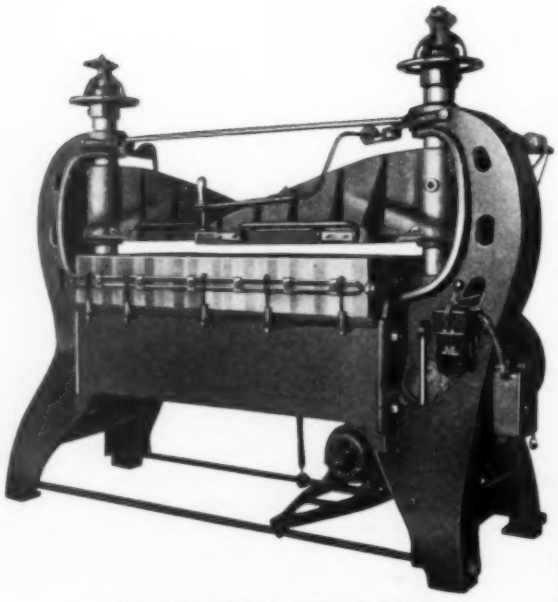


ROTARY CEMENTING MACHINE — MODEL RA

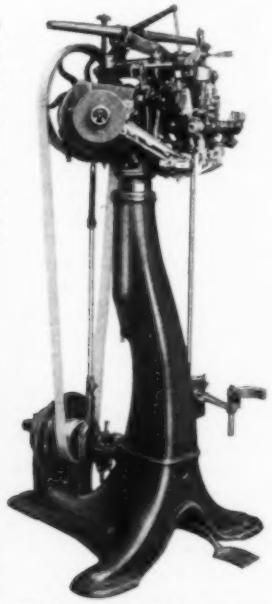
REX PULLING OVER MACHINE MODEL G



WELLMAN SOLE CUTTING MACHINE



IDEAL TWIN CLICKING MACHINE—MODEL E



CONSOLIDATED HAND METHOD LASTING MACHINE—MODEL K

Types of Machines Used in the Manufacture of Tennis Shoes

Embossed and Plain Outsoles

The calendering of embossed and trademark outsoles is done in exactly the same manner as all rubber soles for footwear are machined. Plain soles for buffing or punching with round suction holes are run out in thin sheets and plied up on a laminating drum at the calender.

Molded Soles and Heels

A molding department is necessary in every tennis factory. Molding heavy basketball soles is done by placing the blanks which are cut out of sheeted stock either laminated or milled in the molds and closing the press for the required time, in the same way that heels are molded. Rubber heels used on tennis shoes are somewhat less springy than the commercial half heel and are used only sparingly on work shoes, heel pumps, and oxfords.

Spreading and Doubling Ducks and Drills

Years ago tennis manufacturers discovered that the method used of cutting out separate parts for the outside and lining, as in high priced shoes, with the resultant extra stitching operations, would never do for cheap competitive shoes, and they started backing up two ducks together, with anticipated savings in stitching and cutting. Two general methods are used, one consisting of spreading the duck with a starch or flour paste, the other of spreading with one or two ounces of a cheap rubber compound free from fillers which would discolor it. The duck and drill or sheeting backing are then doubled together on a doubling machine under the pressure of a rubber and steel roller. The use of starch paste has the advantages of cheapness and separation in the shoe, giving the appearance of a loose-lined product, with the disadvantage of separation in lasting, causing difficulty in manufacture. The rubber paste has the advantages of better adhesion, presenting a smoother and stiffer top to the shoe, and allowing the use of lighter fabrics, with the disadvantages of slightly higher cost and less value to the waste. Scrap cuttings from starch paste stock are salable as paper stock, whereas rubber pasted cuttings are classed as roofing stock with a much lower price.

Cements

Cements are very important in the manufacture of tennis shoes, as the adhesion between the foxing and fabric upper is one of the most vital considerations. Poorly mixed cement will cause separation at this point. Rubber chemists have recently been working on white cements which retain their color and do not darken up after vulcanization, a desirable feature on high grade sport and yachting shoes.

Cutting Machines

The cutting out of parts for tennis shoes employs the same types of machines used in all footwear factories. Embossed and some crêpe outsoles are cut singly with a skive on a Wellman cutting machine. Plain outsoles, many crêpe soles, and molded soles, are cut out by die on twin clicking machines. Rag filler parts, counters, and heavy parts can be cut to advantage on beam dinking machines with walker dies. For cutting out tops, rubber and leather trimmings, the twin clicking machines are being used widely owing to the low waste percentages, the increased production on the beam press due to added plies being offset by less yield of parts per yard owing to the heavy dies. Friction fillers and toe caps are plied up with separator paper and cut on clickers. Gum toe caps are died out with mallet and die on a wet block.

After the parts are cut out those which go to make up the top are assembled, sizes are stamped in the linings on a lining marker machine, and the parts are counted into sets for stitching.

The stitching operations are similar to those employed in leather and canvas shoe factories. Briefly, they consist of seaming or stitching the quarters together, binding (for doubled upper shoes only), top stitching, staying (sewing on the leather stays and ankle patches), sewing in the counter, eyeletting (automatic machine), closing (sewing the quarters and vamps together, lacing, and cementing).

Eyeletting and Lacing Machines

The process of lacing, which was formerly done by hand, has been much improved by using a special machine for this purpose. This lacing consists of fastening the eyelets tight together so that the top will hold its shape during the process of making. White cotton string is used and is removed when the shoe is finally inspected.

Top Cementer

Cementing the tops has also been improved. Formerly each individual part of the upper was cemented by hand with a scraper before the top was made up. Now by using a top cementer the top receives an even coat of cement in one operation. This machine consists of a cement container with a feed valve to two revolving corrugated wheels through which the top is revolved by the operator. They are then placed on a revolving, automatic rack to dry and are ready for the maker.

Lasting Machines

Formerly all tennis shoes were lasted by hand, with resultant variance in quality. The present method is to last them up by machinery, using the pulling-over machine and consolidated hand-lasting machine (niggerhead) used by the leather shoe factory, with the difference that where the latter employs tacks the rubber manufacturer lasts up by means of the adhesion of the cemented top to the insole which has also been given a coat of cement on an automatic machine for the purpose.

Rotary Cementer and Outsole Press

The shoes then pass to the finisher, who applies the fillers, gives the shoe from one to three coats of cement according to the quality desired, and puts on the foxings. Outsoles are pressed on automatically by various types of machines devised for this purpose in the last few years.

Vulcanization is accomplished in open air heats although pressure vulcanization is being used more and more as time goes on.

Packing and Inspecting

In the packing department the lasts are removed, lacing strings cut out, and the shoes inspected. Common faults in tennis shoes are blistered foxings, dirty or cement stained tops, blistered soles, high cement line, bad stitching, poor eyeletting, cracked insoles due to faulty stripping, cement line showing next to the insole, and general vulcanizing, making or calendering faults. After the shoes are graded, lacings are inserted, they are wrapped in tissue, packed in cartons, and cased out for shipment.

Thus it can be seen that new developments in tennis manufacturing have made the shoes more of a machine-made proposition than the rest of the footwear line, with more uniform quality and proportionately lower costs as a result.

SULPHUR FOR RUBBER COMPOUNDING

Two brands of sulphur for rubber compounding are designated respectively as "Tube" and "Tire" brands.

Tube brand is sublimed and free of acid. It is soluble in carbon bisulphide and tests in fineness 100 per cent through a 100-mesh screen, and 95 per cent through a 200-mesh screen. It is much esteemed by manufacturers of inner tubes and similar soft rubber products.

Tire brand is unrefined, commercial rubber compounding sulphur, 99½ per cent pure. It tests in fineness the same as the tube brand mentioned above and is entirely suitable for mechanicals, footwear, molded articles, and the generality of rubber products.

"PNEUMATIC TIRES," BY HENRY C. PEARSON. AN ENCYCLOPEDIA of tire manufacture, repair, rebuilding, machinery and processes.

Packing Tires and Tubes for Export

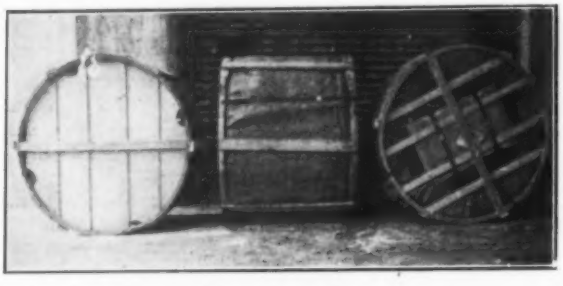
Weakness of Veneer Containers—Wood Packing Cases Heavy—Waterproof Wrapping Paper Costly—Burlap and Tire Paper Wrapping—Shipping Tires and Tubes Together—Novel Method Insures Economy and Security

By John S. Barker

EXPORT tire business, desirable as it is in itself, has always been very greatly handicapped by the high cost of the extra packing required by the steamship companies on foreign bound shipments. Under present highly competitive manufacturing conditions, with tires selling at prices much too close to costs, these export packing requirements have imposed such an additional hardship on tire manufacturers that many of them are no longer seeking export business, asserting that there is practically no profit in it. Recent modifications in steamship packing requirements, however, should prove of material assistance in encouraging manufacturers to develop foreign tire business.

Veneer Cases Not Strong Enough

Until a short time ago tires and tubes would not be accepted for export by the steamship companies unless cased in wooden containers. Veneer cases, wire bound, were tried, but the weight



Tires and Tubes Packed for Export

of the contents broke them open while being transferred to or from the steamers. Moreover, these cases were expensive and did not answer the purpose for which they were used. The only good feature about this class of container for this purpose was the saving in freight on a considerable weight of dunnage.

Solid Wood Cases Too Heavy

Recourse was then had to the old standby, one inch thick wood packing cases. This class of container fulfilled all expectations and the goods reached the consignee in perfect condition. But this method of packing imposed a great hardship on the sales department in this way. The initial cost of a case to hold fifteen 30 by 3½ tires, eleven 4-inch and eight 4½ and 5-inch tires, also sixteen inner tubes packed in the corners was $3.00. This container weighed 90 pounds, or one third of the total weight of the case when packed ready for shipment. Obviously when one third of the total weight of an export shipment consists of dunnage it is very expensive, and to a degree sets a limit on the scope of the export department.

Waterproof Wrapping Paper Too Costly

These conditions existed until a year or so ago, when the steamship companies decided to accept shipments consisting of tires wrapped individually in waterproof tire wrapping paper, strap ironed and then wrapped collectively in waterproof paper. Some steamship companies in addition to this required the bale to be covered with burlap, and placed restrictions on the size of the bale. Tubes still had to be packed in cases. This class of packing effected a big saving in dunnage and some reduction of expense to shippers, although the high cost of the waterproof paper absorbed a large percentage of the saving in freight effected by not requiring containers.

Tire Paper and Burlap Wrappings

The steamship companies then decided to accept shipments wrapped in the tire manufacturer's own style of wrapping paper, and covered both inside and outside with burlap. Bales containing more than six tires were to be crated.

Shipping Tires and Tubes Together

This concession seemed to pave the way for a plan to ship tires and inner tubes together. The writer therefore inquired of the steamship companies if they would accept shipments crated in this manner with a ⅜-inch disk of pasteboard in each end and with the interior of the bale filled with tubes. They replied in the affirmative, and the export tire shipments of this firm have ever since gone out packed as shown by the accompanying illustration.

The left-hand and center bales show end and side views of this method of crating tires and tubes together, while the right-hand crate shows a small carton of tubes strapped to the crate head. In this shipment eight tubes were left over from the full bales, and instead of leaving them to roll around loose inside of a bale they were secured to the crate head and shipped as shown in the picture.

Weight and Freight Savings

This method of packing tires and inner tubes for export cuts down the dunnage to ten pounds for ten 30 by 3½ tires and twenty-seven inner tubes of corresponding size, or ten pounds of dunnage to every 185 pounds of goods shipped, as compared with the second method of packing, which weighs one third of the total shipment, whereas the fourth style of packing weighs a fraction over five per cent of the weight of the total shipment.

Such a big saving in the cost of exporting acts as a great incentive for the export department to go after foreign business. Indeed, this method of packing makes the government drawback look like a nest egg, whereas the old method of packing absorbed the drawback and made it an item to be regarded as lost in the cost of exporting.

Security as Important as Economy

One point that must always be borne in mind in exporting is never to lose sight of the fact that the goods must be packed securely enough to arrive at their destination in good condition. Cheap packing becomes expensive if the goods are returned by the consignee marked "Arrived in Unsalable Condition." In this respect the method of packing here illustrated has proved uniformly successful.

RUBBER PRICE SLIDE RULE

A SPECIAL SLIDE RULE, KNOWN AS Welby's Rubber Calculator, copyrighted by Francis Welby & Co., 9 Mincing Lane, London E. C. 3, is being distributed by that concern for the use of those interested in the prices of rubber in New York and Singapore based on the London price as modified by the rate of London exchange.

Cryptostegia Grandiflora a Possible Source of Commercial Rubber

Early Investigations—Planting Experiments—Commercial Possibilities—Plant Propagation—Extraction Methods Still To Be Perfected

By Charles S. Dolley, M.D.[1]

THIS woody asclepiad twiner, indigenous to Madagascar, Mauritius, and Western Hindustan, was introduced into the West Indies some thirty-five years ago, first as an ornamental plant on account of its showy rose colored flowers, which are called in Mexico *clavel de España*, or Spanish carnation.

Pioneer Investigators

In 1906 the Agricultural Board of the Bahamas at the suggestion of Sir Daniel Morris, then Royal Commissioner of Tropical Agriculture for the West Indies, and with the assistance of W. Monroe Cunningham, Curator of the Nassau Botanical Gardens, began an investigation as to the possibility of utilizing *Cryptostegia grandiflora* as a rubber-producing plant. Seeds had been sent some years previously by Sir Bruce Burnside, Attorney General of Mauritius, to his relatives in Nassau, and one of the original plants derived from this seed is still growing in the garden of the late Alfred Burnside and has attained gigantic proportions.

In a lecture delivered before the Royal Society of Arts in 1898 Sir Daniel Morris suggested that by coppicing the plant and taking yearly crops of shoots, Cryptostegia might be of value, and the experiments begun in Nassau under the supervision of Mr. Cunningham were but putting to test the suggestions of Dr. Morris.

Experimental Plantings

In 1910 while in charge of the chemical laboratory of the Tezonapa Botanical Station in Mexico City my attention was called to *clavel de España* by specimens obtained in Mazatlan, state of Sinaloa. Analyses made of the latex dried stems and pods gave such favorable results—2.66 per cent pure caoutchouc in stems—that I became interested in testing it out on a commercial scale.

The result of my investigations has been the planting of experimental plots in Mexico, Jamaica, the Bahamas, Florida, British Honduras, British Guiana, British East Africa, and India. During the world war active work was dropped but the past two years has shown an awakened interest in this promising plant and various publications have announced that Henry Ford, Harvey S. Firestone and the Curtiss-Bright Co. have begun plantings on their great ranches in Southern Florida near Lake Okeechobee; while the Bureau of Plant Introduction of the United States Department of Agriculture has instituted at Chapman Field, near Miami, comparative cultivation tests to prove the relative value of more than a dozen rubber yielding plants, and it is predicted that rubber production is a Florida probability of the near future, with tremendous possibilities.

Commercial Possibilities

After several years of study of this plant under a great range of conditions, and after collecting data from the extraction of rubber from the stems, seed pods and leaves, and from analyses of the rubber obtained directly from the fresh latex by rubber chemists in England, France, the United States and Mexico, and after tests of the seed floss, the bast fiber and the wood as to their value as by-products, I have satisfied myself that *Cryptostegia grandiflora* will well repay cultivation on a commercial scale.

Since the appearance of my article[2] a number of reports have been published on Cryptostegia rubber, which amply confirm the statements made by Jumelle, myself and others as to the high quality of the rubber yielded by this plant.

The variation in the percentage yields of rubber extracted by solvents from dry stems, ranging from 1 per cent to 4 per cent, is undoubtedly due partly to the fact that the isoprene content of the latex varies with the season, being low during the rainy season and high during the dry season. This was pointed out in 1900 by M. de Bathio as being the case with the closely allied species *Cryptostegia madagascarensis*.[3] This probably accounts for the high percentages obtained from the latex and wood secured by me in Sinaloa, Mexico, during the dry season as compared with the lower percentages yielded by samples taken in the Bahamas and Florida in the rainy season. Considering all the evidence available it appears safe to count on an average yield of 2 per cent of pure caoutchouc from the properly dried cutting of this plant made during the dry season.

There appears to be a tendency on the part of certain chemists connected with commercial enterprises to refer slightingly to Cryptostegia rubber without any sufficient acquaintance therewith to warrant disparaging comments. Extractions made from imperfectly cured cuttings sent by mail afford no basis for criticizing Henri Jumelle, professor in the Technical Institute of Marseilles, a recognized authority on rubber and who has studied the different species of Cryptostegia in Madagascar.[4]

Methods of Extraction

In making extraction tests of Cryptostegia stems I find that the best results are obtained by separating the bark from the wood immediately on making the cuttings, both bark and wood being then dried in thin layers. By this procedure the latex coagulates into rubber; that is, the isoprene or other terpene present in the fresh latex polymerizes into rubber to a greater extent than is the case where the cuttings are imperfectly dried or undergo a sweating process through being allowed to lie in heaps for any length of time. If possible in commercial extraction the wood and bark should be treated separately on account of their value as by-products after the rubber and resins have been removed. It is interesting to note that when a growing stem of Cryptostegia is cut across, the latex not only flows from the severed lactiferous ducts between the wood and the bark but also wells up from the pith. The woody part of the stems therefore yield a portion of the rubber, and if the wood is to be used as a source of paper pulp it is advantageous to have the rubber and resins removed before subjecting the wood to the soda process.

Propagation

The propagation of Cryptostegia is easy; the seeds, which are abundant, germinate readily, and the young nursery plants stand transplantation very well. The plants should be set fairly close together in the row but the rows should be far enough apart to allow of light reaching all parts of the plants and of machines being driven between the rows for harvesting the cuttings. There

[1] Biologist and research chemist Nassau, N. P., Bahamas. Formerly Professor of Biology, University of Pennsylvania, member of the American Philosophical Society, the Franklin Institute, the American Chemical Society, etc., etc.

[2] *India Rubber Journal*, May 20, 1911.

[3] Warburg in *Les Plantes de Caoutchouc et leur Culture, Paris*, 1902, 221-2.

[4] "Cryptostegia grandiflora et son Caoutchouc," *Le Caoutchouc et la Gutta Percha*, July 15, 1913.

is no advantage in leaving the plants uncut for over two years, as old shaded branches tend to die back. In good soil each plant may be counted on to yield five pounds of dry cuttings per annum after the second year. At my Old Fort plantation on New Providence, Bahamas, there are many plants that will yield an average of ten pounds of dry cuttings. If 4,000 plants could be grown to the acre, five pounds of dried cuttings per plant would give a total yield of 20,000 pounds of cuttings per acre, and on the basis of a yield of two per cent of rubber there should be a yield of 400 pounds of rubber per acre. This seems excessive in view of the fact that the average yield of rubber from one of the best paying estates in Malaysia is reported to be but 390 pounds per acre.

It may be that in commercial cultivation not over 2,000 plants per acre could be grown to advantage, from which the yield of rubber should be somewhere around 200 pounds. This is certainly an attractive crop when it is considered that harvesting may begin within two years from planting instead of from eight to ten years as in Hevea culture, and that Cryptostegia affords valuable by-products, which is not the case (outside the matter of seeds) with Hevea, Ceara or Castilloa.

For the sake of comparison turn to jelutong rubber. For years it was believed that the rubber of jelutong was a pseudo rubber due to the fact that most of it had been prepared by methods which failed to separate from the raw material certain substances which exercised a deleterious influence on its stability and vulcanizing capacity. As a matter of fact, the rubber of jelutong is of a very high grade and when properly prepared is comparable to high class rubbers.[5]

Cryptostegia a High Grade Rubber

Cryptostegia rubber properly prepared is also a high class rubber and the problems of producing it commercially and profitably from the cuttings of the stems obtained by coppicing the cultivated plants are probably no greater than those which had to be overcome by Marx, Fox and others in developing the guayule industry, or by Elliott, Morton and others in connection with jelutong. Any chemist familiar with isoprene, dipentene and the various polymeres and homologs of caoutchouc will understand that apparently slight alterations in conditions will produce striking changes in results and this holds true of the terpenes or mother substances of the latex which give rise to rubber, and the percentage yield of rubber from the stems of Cryptostegia will undoubtedly be found to be largely dependent upon the methods employed in preparing the raw material for extraction.

The planting of Cryptostegia in Florida or elsewhere is only repeating on a larger scale what has already been done, and will provide a more satisfactory basis for solving the problems of establishing Cryptostegia as a commercial source of rubber. Frost may militate against the successful cultivation of Cryptostegia in Florida, although it has now been growing in the vicinity of Miami since 1910.

Cryptostegia may be grown in suitable soils and frost-free climates with little trouble in many parts of the world, but methods and machines for handling it economically are still to be perfected, and here is where capital will undoubtedly be able to complete the commercializing of Cryptostegia. My experience points to toluol as the best solvent for extracting the rubber from the dry cuttings, but the machines which I have had constructed for separating the bark from the wood have not proved satisfactory. When satisfactory appliances have been devised and methods perfected, Cryptostegia culture will undoubtedly assume tremendous proportions because it will be the means of bringing rubber within the class of crops which may be grown by any one in frost-free climates, and handled with the same facility as sugar cane.

[5] *Rubber*. P. Schidrowitz, London, 1911.

Rubber Artificial Larynx[1]

Another Humanitarian Use for Rubber—Artificial Speech Made Possible by Rubber Larynx—A Philanthropic Contribution to Mankind

APPLICATIONS of rubber in the service of humanity for the relief of disease and deformities and the preservation of health have been made and developed continually since the early days of vulcanization.

A Startling Development

To the long list of rubber articles designed for humanitarian needs there has recently been added a most noteworthy and interesting development which is startling in that it permits artificial speech.

Any unfortunate person who is mute by reason of the removal of his larynx can be supplied now with a new means of talking by the use of an artificial larynx of rubber. This apparatus has recently been developed by Dr. Harvey Fletcher and Messrs. Wegel and Lane, Western Electric Co. engineers, on a plan suggested by Dr. John E. Mackenty, of New York.

A Philanthropic Contribution to Mankind

The new device, according to Dr. Mackenty, represents practically a philanthropic contribution to mankind. There are so few persons who require it and the possible sales are so far between that his efforts to interest manufacturers to develop the idea met with no response. Finally executives of the laboratories maintained by the American Telephone & Telegraph Co. and the Western Electric Co. decided to undertake the work, even though no certain return of their expense was in sight. Using the knowledge of human speech acquired in their telephonic studies scientists of these laboratories have now produced a device which will enable many unfortunate people to talk again.

Not only will the artificial larynx add happiness and earning power to its users, but it will remove one barrier to the proper treatment of cancer of the throat. In the early stages of the disease, when a radical operation offers a practical certainty of cure, sufferers have often hesitated because they dreaded the loss of their voices. Delay, even while trying other treatments, has usually allowed the disease to progress to a point where cure is impossible. With the fear of future silence removed, Dr. Mackenty believes that sufferers no longer will risk their lives, but will have the cancerous tissues removed and do their talking with an artificial larynx.

Construction of Artificial Larynx

In the construction of the artificial larynx rubber is the principal material used. The apparatus could be made entirely of rubber if desired, by substituting hard rubber for the few parts now made of metal. The apparatus comprises a hard rubber shell or air chamber containing a pure rubber vibrating membrane;

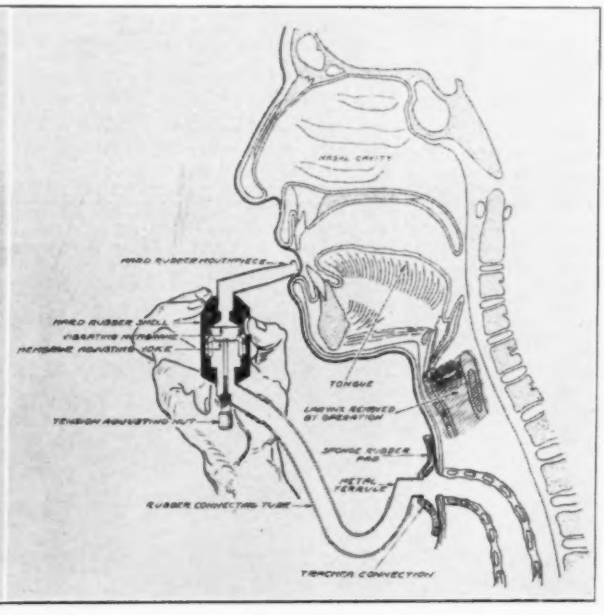
[1] Data and illustrations from Western Electric Co., New York, N. Y.

a hard rubber mouthpiece, and a soft rubber tube connection with the trachea connection supplied with a sponge rubber pad.

The body of the larynx is in two parts, in the upper part of which a narrow strip of pure rubber dental dam stock is adjustably stretched across the flaring outlet within the larynx. Suitable tension of the vibrating rubber band or membrane, which functions as a vocal cord, is secured by the movement of a metal yoke, to the branches of which the ends of the rubber band are attached. The tension is adjusted by a nut on the threaded yoke stem below the larynx.

The various parts of the artificial larynx, its manner of application and method of operation are clearly indicated in the illustrations.

Rubber Larynx in Use



Construction and Application of Rubber Larynx

Removal of Natural Larynx

Referring to the removal of a person's larynx, the operation is a very delicate one, involving the removal of the familiar "Adam's Apple" and adjacent parts of the throat. Ultimately the upper end of the windpipe is brought forward into the wound. This is sewed up in such a way that the windpipe communicates directly with the outer air. After the wound has healed, the patient may wear the talking apparatus all day, with a layer of gauze underneath to keep dust out of his lungs.

Method of Attaching Artificial Device

The artificial larynx, is connected to the user by attaching the sponge rubber pad of the inlet over the windpipe opening, using tapes around the neck and chest. The air, in breathing, finds inlet and outlet to the lungs through a side opening in the rubber larynx and the connecting flexible tubing.

Artificial Speech

In use the side opening of the larynx is closed by the thumb. Air forced from the lungs is set into vibration by the tensioned band, and these vibrations are carried through a short tube like a pipe-stem into the speaker's mouth. Here the vibrations are modulated in much the same manner as though they were naturally produced in the throat. The result is speech which can easily be understood. It differs from natural speech chiefly in being a low pitched monotone, not loud, but perfectly intelligible.

The method employed in the artificial larynx to cause vibrations of the air is precisely the same as that used in the toy balloon squawker, scientifically developed and applied to a laudable humanitarian end.

Asked about his ability to use the telephone, one man said that he frequently used it and his listener had no difficulty understanding him. Talking with this apparatus imposes no particular strain on either speaker or listener. Best of all, say the users of the device, their new ability to talk has helped them to get back to work and resume their daily life among their fellow men.

FIRESTONE UNIVERSITY SCHOLARSHIP

Harvey S. Firestone, president of the Firestone Tire & Rubber Co., Akron, Ohio, is for the sixth successive year offering, in connection with the Highway Education Board, a four years' university scholarship, the estimated value to the winning student being approximately $1,000 annually, or at least $4,000 for the four years.

All high school students have the right to participate in this contest, the requirement being that each essay submitted should have as its subject "Economies Resulting from Highway Improvement." Those desiring further particulars should address the Highway Education Board, Willard Building, Washington, D. C.

N. T. D. A. HOLDS ANNUAL MEETING

The annual winter meeting of the National Tire Dealers Association was held January 29 and 30 at the Hotel Lexington, Chicago, Illinois. Leading questions for discussion on this occasion included the selection of dates for the next annual convention, the preparation of a definite working program for the coming year, the consideration of resolutions adopted at Akron last November, and also the meeting with representatives of the Rubber Association in a joint conference. It was decided that the next convention should be held November 17, 18 and 19 at St. Louis, Missouri, and a local association is already considering plans for making the occasion a most successful one.

Activities of the Rubber Association of America

Inventory—Production—Domestic and Foreign Shipments of Pneumatic Casings—Inner Tubes—Solid Tires

	Pneumatic Casings				Inner Tubes				Solid and Cushion Tires			
	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments
Twelve months, 1922	..	58,401,086	30,698,139	29,221,899	..	72,463,938	38,137,181	36,656,435	..	2,320,650	786,603	688,845
Twelve months, 1923	..	67,448,419	33,933,936	32,991,810	..	87,807,770	45,128,083	43,554,963	..	3,013,674	692,148	690,090
1924												
January	56	4,808,084	3,220,292	2,838,570	51	6,720,247	3,887,959	3,542,500	10	182,782	53,604	47,295
February	55	5,265,133	3,278,674	2,866,626	50	7,339,307	4,067,631	3,397,668	10	188,519	60,646	52,965
March	57	5,763,084	3,427,692	2,990,872	53	8,157,704	4,218,950	3,500,105	10	203,608	68,662	61,482
April	60	6,164,226	3,307,478	3,013,441	54	8,627,343	4,035,242	3,586,279	10	212,419	69,534	58,486
May	58	6,331,193	3,038,586	2,769,970	53	8,761,812	3,744,108	3,648,490	10	219,538	63,901	60,267
June	55	6,155,537	2,629,742	2,753,143	51	8,166,158	3,493,431	3,964,609	10	212,704	50,887	58,716
July	52	5,138,474	2,552,329	3,561,110	49	6,634,022	3,857,289	5,392,253	10	202,850	42,498	51,449
August	52	4,477,016	3,234,741	4,193,114	48	5,758,310	5,015,687	5,619,914	9	183,159	52,516	60,684
September	56	4,524,405	3,530,878	3,404,239	51	6,038,868	5,506,442	5,180,804	10	179,927	54,106	59,581
October	56	5,338,380	3,877,076	3,146,761	54	7,352,200	5,895,797	4,274,916	10	182,400	58,938	58,078
November	54	5,207,340	3,189,832	3,359,783	52	7,667,988	4,602,141	4,749,146	10	185,776	49,349	49,748
December	55	5,570,389	3,437,873	3,107,433	53	8,289,112	4,704,403	4,155,109	10	191,620	57,352	53,305

"Production" and "Shipment" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and, as a total represents all tires and tubes still owned by manufacturers as a domestic stock.

"Shipment" prior to January, 1924, includes only stock forwarded to a purchaser and not stock forwarded to warehouse, branch, on consignment basis, or abroad. After January, 1924, shipments abroad are included in these figures.

Statistics Compiled from 1924 Questionnaire Covering the Fourth Quarter of 1924[1]

Reclaimed Rubber	Long Tons: Inventory at End of Quarter	Production	Shipments
Reclaimers solely (7)	3,851	15,114	14,279
Manufacturers who also reclaim (18)	3,509	10,149	6,585
Other manufacturers (49)	1,478	.....	.....
Totals	8,838	25,263	20,864

Scrap Rubber	Long Tons: Inventory at End of Quarter	Consumption in Manufacture Reclaimed	Due on Contract at End of Contract
Reclaimers solely (7)	33,437	17,420	7,836
Manufacturers who also reclaim (18)	6,758	13,924	5,017
Other manufacturers (9)	1,078	.....	.....
Totals	41,273	31,344	12,853

NUMBER OF TONS OF CRUDE RUBBER CONSUMED IN THE MANUFACTURE OF RUBBER PRODUCTS AND TOTAL SALES VALUE OF SHIPMENTS OF MANUFACTURED RUBBER PRODUCTS

Product	Number of Tons of Crude Rubber Used	Total Sales Value of Shipments of Manufactured Rubber Products
Tires and Tire Sundries:		
Automobile and motor truck pneumatic casings	50,988	$120,361,000
Automobile and motor truck pneumatic tubes	13,873	21,019,000
Motorcycle tires (casings and tubes)	106	384,000
Bicycle tires (single tubes, casings and tubes)	199	1,249,000
All other pneumatic casings and tubes not elsewhere specified	.....	140,000
Solid tires for molded vehicles	3,841	6,889,000
All other solid tires	140	87,000
Tire sundries and repair materials	747	4,133,000
Totals	69,894	$154,262,000
Product		
Other Rubber Products:		
Mechanical rubber goods	3,774	$17,067,000
Boots and shoes	3,843	33,286,000
Insulating wire and insulating compounds	745	7,855,000
Druggists' sundries, medical and surgical rubber goods	695	3,246,000
Waterproof cloth, clothing and rubber sheeting	756	5,029,000
Hard rubber goods	744	3,233,000
Heels and soles	1,910	5,723,000
Miscellaneous, not included in any of the above items	1,030	3,703,000
Totals	13,497	$79,142,000
Grand total—all products	83,391	$233,404,000

INVENTORY OF CRUDE RUBBER IN THE UNITED STATES AND AFLOAT FOR UNITED STATES PORTS

On Hand	Long Tons: Plantation	Pará	All Other	Totals
Manufacturers	40,166	2,625	1,868	44,659
Importers and dealers	9,212	847	113	10,172
Totals on hand	49,379	3,472	1,981	54,831

Afloat	Long Tons: Plantation	Pará	All Other	Totals
Manufacturers	16,094	211	27	16,332
Importers and dealers	27,214	508	105	27,827
Totals afloat	43,308	719	132	44,159

[1] Number of rubber manufacturers that reported data was 206; crude rubber importers and dealers 37; reclaimers (solely) 7; total daily average number of employes on basis of third week of October, 1924, was 157,773.

It is estimated that the crude rubber consumption figures are 90 per cent of the total, and the crude rubber inventory 95 per cent of the total for the entire industry.

1924 RUBBER GOODS EXPORTS INCREASE

According to *Commerce Reports*, the total value of rubber products, including rubber toys, exported from the United States during 1924 was $40,630,795, or $3,658,625 more than the corresponding value for 1923, and $6,621,487 better than 1922 figures.

Although statistics show a reduction for 1924 as compared with 1923 in the number of automobile casings and tubes exported and a slight increase in exports of solid tires, there has been an excellent trade in rubber footwear and certain other products. December shipments proved particularly good along several lines, the exports of rubber boots, for example, being heavier than for any month during 1923 and 1924. December was also the second best month of the year for exports of canvas rubber-soled shoes, rubber heels and soles, and rubber thread.

DURING THE YEAR 1924 THE UNITED STATES IMPORTED 183,586 automobile tires, value $1,098,715. France supplied by far the largest amount, the figures being 181,710 tires, value $1,072,643.—*Commerce Reports.*

The All-Rubber Packing System

Tree, Bark and Earth Scrap Crêpe Being Tried as Casing Material for First Latex Grades—Novel Packing Method Developed in the Federated Malay States—Advantages Compared to Wooden Chests or Burlap Bales

By T. E. Gjorup

WITH the object of providing a packing container that insures rubber being received by the manufacturer in the same clean and fresh condition in which it was before packing on the plantation, a novel method of rubber packing has been developed in the Federated Malay States that is said to be better and cheaper than the use of wooden chests or burlap bales.

Making and Filling Rubber Containers

This method, known as the all-rubber packing system, consists of a process whereby low grade rubber, such as tree scrap, bark scrap and earth scrap crêpe, is utilized as casing material for first latex grades. The casing or container is produced by pressing together sheets of any of the low grade crêpes, it being found that the sheets adhere firmly to one another by this simple process. A wooden block covered with metal sheeting of the dimensions of a momi chest, i. e., five cubic feet, is used as a frame and the sheets are assembled and molded on this block. The result is a rubber container which holds a bale of rubber somewhat larger than that usually packed into a momi or venesta chest. In practice it has been found possible to pack from 25 to 50 pounds more sheet or crêpe by this method in a space of five cubic feet than in chests of this same measurement.

Twenty Tons of Smoked Sheets Packed in Rubber Containers

When the rubber is to be packed in the rubber container, 225 pounds of sheet rubber or 175 pounds of crêpe are placed in the press and compressed into a body about 18 by 18 by 24 inches. Then the rubber container is slipped over it and the extending cover flaps are folded back. As the container is flexible and somewhat elastic it fits closely around the compressed body of rubber. To prevent the container from adhering to the contents, a small amount of French chalk or China clay may be rubbed well into its outer walls. The presence of French chalk on the inside of the container also acts as a protection against edge mould, as this is generally developed from the moisture present in wooden chests. The package is then reinforced and bound with metal strapping.

Advantages Claimed for New Method

Among the advantages claimed for this method of packing are the following: (1) The container can be manufactured on the plantation at a trifling cost. (2) It is dust-proof, non-fibrous, splinter-proof, and also rain-proof, when made with three layers of crêpe. (3) It is unbreakable and therefore arrives at its destination with its contents in perfect condition. (4) It avoids all the heavy charges for reconditioning which are inseparable from wooden chests. (5) As the rubber is delivered at its destination in exactly the same condition as when packed and shipped, it will not be penalized on account of dirt, mould, splinters, etc., and will therefore command the highest market price in relation to its quality. (6) The container, which is composed of 12 to 20 pounds of low grade crêpe, can be sold on arrival at about the current price of this standard. The cost of production is about three cents per pound (S. S. currency). (7) The cost of making each container is about 7 cents (S. S. currency). Two Tamil coolies working together can make from twelve to fifteen per day.

Relative Costs of Packing and Shipping

The following figures show the relative costs of packing and shipping to London one measurement ton, i. e., 50 cubic feet, of rubber by the present method of packing in wooden chests and by the all-rubber packing system.

WOODEN CHESTS	
10 chests @ $1.50	$15.00
Freight to estate and loss on defective material @ 15 cents per chest	1.50
Assembling @ 2 cents per chest	.20
Nails, ½ pound per chest .. 10 cents per pound	.50
Box strapping @ 25½ cents per chest	2.55
Reconditioning in the East and at destination @ 50 cents per chest	5.00
Freight, 62/6d @ exchange 2/4d	26.80
Total (S. S. currency)	$51.55
Cost of packing and shipping 2000 pounds of smoked sheet or 1500 pounds of crêpe rubber	

ALL-RUBBER PACKING	
Cost of producing 150 pounds of low grade crêpe @ 3 cents per pound	$4.50
Freight to estate	....
Cost of making container @ 7 cents	.70
Nails	....
Strapping (Signode) @ 30 cents per container	3.00
Reconditioning	....
Freight, 62/6d @ exchange 2/4d	26.80
	$35.00
Less proceeds of sale of 150 pounds low grade crêpe @ 20 cents per pound	30.00
Total (S. S. currency)	$5.00
Cost of packing and shipping 2250 pounds of smoked sheet or 1750 pounds of crêpe rubber	

It will be seen from the above figures that there is a saving of over $46 per ton (S. S. currency), which is equivalent to about 3½ per cent of the total value of the shipment at 70 cents (S. S. currency) per pound. In addition the freedom from penalties on account of the undamaged condition of the rubber on arrival is equivalent to a saving of several cents per pound.

Ample Packing Material on All Plantations

At the present time on most of the plantations in the Federated Malay States the lower grade rubbers are destroyed. In a few cases, however, tree scrap, bark scrap and earth scrap are being stored for future treatment. The proportion of low grade rubber

of all kinds on well managed plantations varies from 15 to 25 per cent of the total output. The adoption of the all-rubber packing system would consume about 50 per cent of the low grades, therefore the plantations would always have a surplus of packing material on hand. The cost of converting the low grades into crêpe does not exceed three cents per pound (S. S. currency) on plantations having their own equipment for this purpose. In the Federated Malay States commercial factories treat and crêpe the low grades at a rate of five to six cents per pound of crêpe (S. S. currency). As the tapper has to remove and collect the low grade rubber, regardless of whether it is to be destroyed or subsequently converted into crêpe, the cost of collecting the low grade is included in the collection cost of the first latex grade.

Sales Value of the Rubber Container

In figuring the comparative cost of packing and shipping rubber in wooden chests and by the all-rubber packing system the proceeds of sale of the rubber covering is based at 20 cents per pound (S. S. currency) or about 10 cents American money. This, it must be admitted, is a low estimate, and based on the current price of first latex rubber; the market value of the cover strips would probably be from 20 cents per pound and upward (United States currency), depending, of course, on the quality of the low grade crêpe used. The writer believes that the cover strips comprising the container would find a sale in the commodity market, as only sound, well-treated and well-dried low grade crêpe should ever be used for making the container, in order to insure the arrival of the contents in perfect condition.

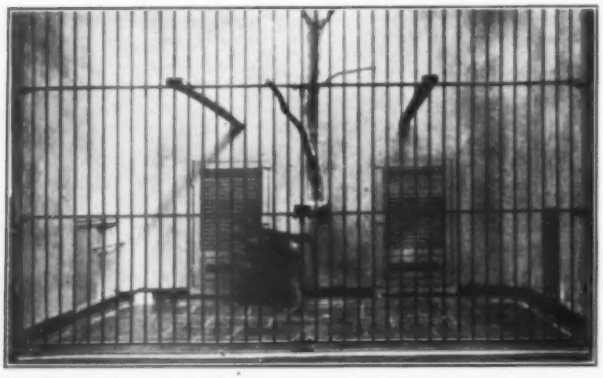
Objections to Different Packings Compared

One objection to this system of packing is that the rubber arrives in a more or less massed condition making it difficult to obtain a "free" sample. That, however, also applies to rubber baled in burlap or matting, not to mention the 25 per cent or more of wooden chests arriving in New York, London, etc., in a broken condition, sometimes with the chest completely missing so the shipment cannot be identified unless the plantation's name is impressed on the sheets of rubber.

The writer has been informed that sometimes as high as 75 per cent of the chests of a shipment have arrived in Akron, Ohio, in damaged condition. Even when the chest arrives in good condition it is sometimes impossible to obtain a "free" sample, especially when 200 pounds of sheet have been pressed into it; or where the box has been exposed to extreme heat on board ship when the rubber is stowed near the boiler room.

In conclusion it may be mentioned that infection, if caused by exposure to heat, water, moisture, etc., after the rubber is packed in chests or baled in burlap and matting, cannot be detected unless the rubber is unpacked, whereas the contamination would become visible on the rubber container before it is communicated to the contents.

A NEW USE OF RUBBER



Wright Rubber Products Co.

Rubber Tiled Monkey Cage

Several thousand feet of rubber bricks have been recently laid in the Forest Park Zoo at St. Louis, Missouri, by the Wright Rubber Products Co., Racine, Wisconsin, and from all reports the monkeys are much in favor of the new rubber paving. Such installations of rubber tiling are said to obviate danger of pneumonia from cold floors and also to eliminate odors.

Report of Rubber Section N. S. C.

An improvement in both the frequency and severity rates is shown by the report of the Rubber Section National Safety Council covering the first six months of 1924. The experience of 15 companies gives a frequency rate of 25.96 and a severity rate of .814. For the last half of 1923, with 16 companies represented, the rates were respectively 26.73 and 1.50. During the first half of 1923 they were 37.18 and 1.07. The low severity rate of .814 for the first half of 1924 was due to the fact that there were only two deaths and no permanent total disabilities during the period.

PERCENTAGE CLASSIFICATION OF LOST TIME ACCIDENTS

	First 6 mos. 1922 % Total	Second 6 mos. 1922 % Total	First 6 mos. 1923 % Total	Second 6 mos. 1923 % Total	First 6 mos. 1924 % Total	Per Cent Reduction 30 Months
Handling Tires—Materials	33	37	33	29	25	8
Hand Tool—Accessories	17	14	19	17	17	0
Machine Accidents	13	14	16	16	16	3 inc.
Falling Materials*	..	..	..	10	11	..
Eye Accidents	10	5	4	5	6	4
Falls	6	7	6	7	6	0
Burns	2	3	3	3	3	1 inc.
Wire Cuts, Scratches, etc.	2	2	1	3	2	0
Miscellaneous	17	18	18	10	14	3
	100	100	100	100	100	..

*Classification first used 1923.

From these figures it is evident that education in accident prevention should be stressed on the first four classifications.

Handling materials shows a slight improvement—just the difference that miscellaneous increased; which may mean that a more careful classification is needed. Many accidents grouped under hand tools occur when employes are using knives and shears, and an intensive drive on the correct use of these two kinds of hand tools would prevent many of these accidents. Inattention on the part of the injured and others, lax supervision and lack of proper instruction, rather than lack of mechanical guards, are undoubtedly responsible for most of the machine accidents. These accidents, while comprising only one-sixth of the total, are usually of a serious nature and result in much lost time, with a consequent increase in severity rates and insurance premiums.

One feature of the comparison deserves special attention, namely, eye accidents. In 1921 these accidents comprised 16 per cent of the total, which percentage was lowered to four during the first half of 1923. During the next six months the percentage rose to five and again to six during the first half of 1924.

A new classification, "falling material," has been formed from accidents formerly listed as "miscellaneous." Falling material usually indicates bad piling or storing or insecure fastenings. As these accidents form about one-tenth of the total, they indicate a need for more careful supervision.

Under the vague description "miscellaneous" are listed 14 per cent of the accidents which occurred during the period covered by this tabulation. This classification, which gives no help in preventing a recurrence of similar accidents, must be kept as low as possible if the maximum benefits are to be obtained from accident statistics.

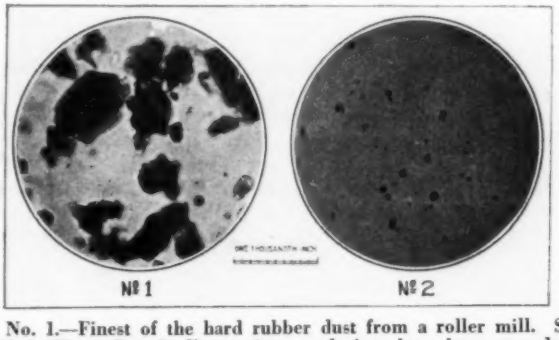
In addition to the usual summary of the experience of the Rubber Section the statistical committee has prepared interesting tables showing in detail the causes of 1,600 lost time and 24,935 no lost time accidents.

Dust Explosions in the Rubber Industry[1]

EXPLOSIONS in fine organic dust are a serious menace to life and property and cannot be effectively protected against by automatic sprinklers or other fire extinguishing methods in common use.

Hard rubber has been ground with roller mills for 20 years or more without frequent or serious explosions. Within the past three or four years ball mills have been introduced and, where air is used for taking the dust from these mills, explosions are frequent. The reason is shown at once by the microscope.

The roller mill grinds practically all the dust coarser than one one-thousandth of an inch in diameter, while with the ball mill a considerable portion is in the order of magnitude of a ten-thousandth of an inch in diameter as shown in micrograph No. 1 and No. 2. Organic material of an order of magnitude of one ten-thousandth of an inch in diameter is highly explosive.



No. 1.—Finest of the hard rubber dust from a roller mill. So called "Water Dust." Few serious explosions have been recorded from this type of mill although they have been in use for twenty years or more. They apparently can produce but a very small percentage of dust less than one-thousandth of an inch in diameter.

No. 2.—Finer of the hard rubber dust from a ball mill. This dust is highly explosive. An appreciable proportion of the total product is of this order of magnitude. Explosions are of common occurrence when air is used for separating dust from ball mills.

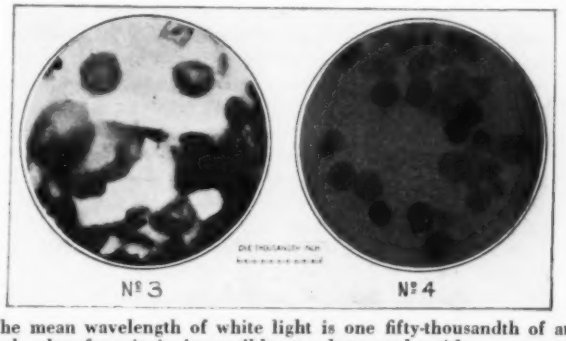
The remedy is to use an inert gas instead of air for handling this fine dust. Flue gas has been found to serve this purpose very well. A small amount of sulphuric acid may be condensed from this gas so that thin metal pipes are attached in time. It is probable that the acid as well as water can, in part at least, be removed by filtering through loosely packed steel turnings. The small amount of soot contained does no harm with black rubber. Carbon dioxide recorders have been used to show the percentage of oxygen burned out of the air. No explosion has been noted with seven per cent carbon dioxide.

Colloidal and porous particles which have large surface-area compared with their volumes may have gases and vapors attached to them in a thin film. Therefore, as the particle becomes very small, such a surface film of attached or, as it is called, "absorbed" gas may form an appreciable proportion of the weight of the particle.

Such fine particles stick together in clumps. See micrograph No. 3. The absorbed gas or moisture film is probably a factor in this clumping. Moreover, when the particles are very fine the absorbed gas may be in sufficient quantity to influence the violence of the explosion, an inert gas like nitrogen or carbon dioxide reducing the explosion pressure and oxygen increasing it.

The fineness of particles are an important factor in dust explosions. See micrograph No. 1 and No. 2. So long as the dust remains in clumps, it behaves like coarser particles, but if a sufficient change in temperature or humidity, or an electric charge causes the clumps to break up, a highly explosive atmosphere is formed from one which a few seconds before was harmless.

Micrograph No. 3 at unusually high magnifications shows such clumps in dust from a corn elevator in which an explosion took place. It will be noted that these clumps are composed of dust of about one ten-thousandth of an inch in diameter attached to larger particles. Hard rubber ground by a ball mill or other fine dust, as it becomes finer at length reaches a maximum of effective fineness, when it is in the neighborhood of five ten-thousandths of an inch in diameter, most of the dust finer than one ten-thousandth of an inch forming clumps of a diameter of about five ten-thousandths of an inch with a coarser particle as a nucleus. A maximum will be expected in the violence of the explosion when the dust is finest, whether as single particles or clumps of particles.



The mean wavelength of white light is one fifty-thousandth of an inch, therefore it is impossible to photograph with a common microscope particles of this diameter or less.

No. 3—Dust from a corn elevator in which an explosion occurred, highly magnified. The larger particles are corn starch granules with which are clumped mould spores and particles from the corn hulls pulverized by abrasion in the conveyors.

No. 4.—Common corn starch granules at the same magnification as the rubber and elevator dust.

In many of the more violent explosions in grain elevators and other dusty rooms there have been two or three distinct explosions—the first one of insignificant violence, possibly from a slight fire or a hot bearing in a location containing much clumped dust which the heat was able to break up and distribute, the fine dust thus instantaneously distributed in the air and ignited by the fire causing violent explosion. Sometimes this is followed by another and more violent explosion as clumps of dust throughout the structure are broken up by the heat or concussion of the first explosion.

[1] By Fred S. Hoxie, Engineer, Associated Factory Mutuals Fire Insurance Companies, Boston, Massachusetts. Read at the National Safety Council meeting, Louisville, Kentucky, September 29, 1924.

TENTH EXPOSITION OF CHEMICAL INDUSTRIES

As in previous years the general public, by means of exhibitors' tickets, will be admitted to the Tenth Exposition of Chemical Industries, which will be held this year at the Grand Central Palace, New York, N. Y., during the week of September 28, 1925. Chemical control is becoming more and more a factor in every industry, and the managers of the exposition comment on the cooperation, enthusiasm, and wholehearted interest being displayed on all sides in connection with the coming event

What the Rubber Chemists Are Doing

Determination of Rubber and Inorganic Materials in Soft Rubber Goods

By R. T. Mease and N. P. Hanna[1]

IN ORDER to make a quantitative separation of rubber from its contained compounding ingredients the solvent used must have the following properties:

1. It must dissolve vulcanized rubber compounds in a reasonable time and under conditions easily obtainable in the laboratory.
2. After solution it must permit complete separation of the pigments from the solution of rubber by some simple method, such as centrifuging or filtration.
3. It must have no chemical action upon any of the compounding ingredients.
4. It must not burn, oxidize readily, or evaporate at the temperature required to effect solution.
5. It must be easily obtained or prepared and at a moderate price.

It is common knowledge that certain saturated hydrocarbons, such as mineral oils, cause rubber goods to disintegrate at ordinary temperatures, and that the action is greatly accelerated by an increase of temperature. The action is not accompanied by any great swelling of the sample. From this it would appear that a mineral oil when used as a rubber solvent might meet conditions 1 and 2, and that it may be purified to meet conditions 3, 4, and 5. The solvent found most suitable for the purpose was a mixture of 75 per cent by volume of oil, arbitrarily designated as No. 32, and 25 per cent of No. 34. The oils have the following properties:

TABLE I.—PROPERTIES OF OILS FINALLY USED[a]

	Oil No. 32	Oil No. 34
Color	Colorless	Colorless
Acidity	0.01	0.04
Sulphur	0.13%	0.10%
Viscosity at 20° C. (68° F.) (Saybolt Universal)	56 sec.	52 sec.
Viscosity at 37.8° C. (100° F.) (Saybolt Universal)	45 sec.	43 sec.
Flash point	132.2° C. (270° F.)	129.4° C. (265° F.)
Fire point	176.7° C. (350° F.)	157.2° C. (315° F.)
Specific gravity	0.8530	0.8405

[a] Tests made in the laboratories of the Bureau of Standards by N. Berryman and G. E. Graham.

During the course of experiment it was learned that mixtures of oils generally act better than one alone. It is not necessary that the oils rigidly meet the specifications given in Table I, but before using them in quantitative work they should be tried separately and as mixtures.

The advantage of the mixture of oils chosen is its ability to effect nearly complete solution in a relatively short time and at low temperature. If 0.5 gram of the sample is heated in this solvent at 150 degrees C., in most cases the rubber will be broken down at the end of three or four hours, 70 to 95 per cent of the rubber hydrocarbon present will be in solution, and the solid can be filtered off by means of an asbestos pad. The solvent and temperature used do not change the weight of the inorganic materials present. The separation can be made quantitative, and a method was adopted for the determination of inorganic ingredients and used to determine rubber hydrocarbon by differences.

Method

(1) Weigh two portions (*a* and *b*) of 0.5 gram of the finely ground sample. Extract each with a mixture of 32 parts by volume of acetone and 68 parts of chloroform for a minimum of eight hours.[2] If the liquid in the extraction bucket is still colored at the end of this time, continue the extraction. Remove the samples and put each into a 150-cc. lipped assay flask, add 20 to 25 cc. of the mixed oils, cover with a watch glass, and heat in an air bath at a temperature of 150 degrees to 155 degrees C. until solution appears complete, which requires about three hours and then 15 to 30 minutes more. Solution may be considered complete when the rubber colloid has been broken down and the oil seems quite clear. Remove the flasks from the air bath, cool to about 110 degrees C., and add in a small stream 10 to 15 cc. of benzene, while mixing thoroughly; allow to cool and then dilute with sufficient petroleum ether to fill the flasks to within about 2 cm. of the top; mix thoroughly, cover the flasks to prevent evaporation, and allow the mixture to stand overnight.

(2) Treatment of Portion *a*. Prepare a Gooch crucible with finely divided asbestos that has been treated alternately with strong caustic soda solution and concentrated hydrochloric acid and then washed well with water. Ignite the crucible, cool and weigh; call this weight *c*. Filter the mixture by decantation through the crucible, using suction; wash well with petroleum ether, followed by warm acetone, and by a warm mixture of equal volumes of acetone and chloroform if the filtrate is dark. Finally, wash with hot alcohol. A portion of the pigments will remain in the flask. Dry the crucible and flasks with their contents for one hour at a temperature of 105 degrees to 110 degrees C. Cool and weigh. Call the weight of the flask and adhering residue *d*, and of the crucible and contents *e*.

(3) Remove the acid-soluble materials from the flask and Gooch crucible, as follows: Add to the flask and crucible a few cubic centimeters of boiling alcohol; allow to soak for two or three minutes and then wash two or three times with boiling water; let the flask cool, add 10 cc. of concentrated hydrochloric acid, and swirl the flask to bring the acid in contact with the pigments. Pour the acid from the flask into the crucible and let it stand until no more bubbles rise through the liquid. If carbonates are present there is danger of loss by excessive frothing. This can be prevented by first adding a few drops of the acid to the crucible and sucking it through the pad. After the violent action has ceased, add the remainder of the 10 cc. of acid. When no more gas is evolved, draw the acid through the pad and again wash with 20 cc. of acid, adding a little at a time; then wash well with hot water and transfer as much as possible of the residue remaining in the flask to the asbestos pad. If by qualitative tests the sample was found to contain antimony, save the filtrate and washing for treatment as described in (4). Dry the flask and crucible for one hour at 105 degrees to 110 degrees C., cool, and weigh. Call the weight of the flask *f*, and that of the crucible containing the organic residue and acid-insoluble materials, *h*. Burn the organic residue from the asbestos pad by igniting in a furnace at 700 degrees C., cool, and weigh. Call this weight *k*. If the sample contains barytes, save the contents of the crucible for treatment as described in (5).

(4) Determination of the Sulphur Present as Antimony Trisulphide.[3] Determine the antimony and express the sulphur present as antimony trisulphide in percentage of the sample and call this *s*.

(5) Determination of Barytes. Tranfer the contents of the crucible from (3) to a 50-cc. porcelain crucible and fuse with five grams of a mixture of equal weights of sodium carbonate and nitrate. Stir well during the fusion. Cool the crucible, put it into a 250-cc. beaker, cover with distilled water, and heat on the steam bath until all the solid material has been loosened

[1] Bureau of Standards, Washington, D. C.
[2] Bureau of Standards Technological Paper 162
[3] Collier, Levin, and Scherrer, *India Rubber Journal*, 64, 580 (1921).

from the crucible; filter and wash the residue back into the beaker and dissolve with 10 per cent hydrochloric acid, using about 10 cc. excess and keeping the solution warm. Filter off the asbestos, wash well with hot water, and precipitate the barium in the solution with 10 cc. of a 10 per cent solution of sulphuric acid. Heat on the steam bath, filter off the precipitate, ignite, and weigh the barium sulphate. Calculate the percentage of sulphur present as barytes and call this value *m*.

(6) Treatment of Portion *b* for Sulphur in Compounding Materials. Treat Portion *b* as described under (2), but omit the weighing of the crucible. After the pigments have been dried, transfer the asbestos pad and pigments into the flask. The last traces of pigments can be removed from the sides of the crucible with wads of absorbent cotton moistened with a little warm water. Add to the flask about 10 cc. of bromine water and swirl the flask to moisten the contents. Add 20 cc. of concentrated nitric acid saturated with bromine[4]. Allow to stand in the cold for 15 minutes and then heat on the steam bath for one hour. Transfer the contents of the flask to a 75-cc. crucible, and evaporate to dryness.

Complete the determination of sulphur by the method of the Bureau of Standards. Let the value for the percentage of sulphur in fillers be represented by *n*.

The percentage of total inorganic materials corrected equals

$$100\ \frac{(e+d+k)-(c+f+h)}{0.5}+(m+s)-n$$

To determine the percentage of rubber hydrocarbon subtract from 100 the sum of the percentages of acetone, chloroform, alcoholic alkali extracts, free carbon, glue, total sulphur corrected, and total inorganic materials corrected.[5]

Principal Source of Error and Accuracy of Method

The principal source of error in the proposed method is in determining when solution is complete, especially if the sample contains free carbon. To determine the accuracy of the method, it was tried on samples representing different types of rubber compounds, designated as *A*-1, *A*-2, 206-25, 206-45, and 207-15. The composition of each according to the compounder is given in Table II.

TABLE II.—COMPOSITION OF EXPERIMENTAL COMPOUNDS

(Per cent by weight)

MATERIAL	*A*-1	*A*-2	206-25	206-45	207-15
Rubber	79.25	78.40	40.00	40.00	37.00
Magnesium carbonate	0.0	0.0	12.00	12.00	15.00
Barytes	0.0	0.0	0.0	0.0	8.00
Barium carbonate	0.0	0.0	0.0	0.0	7.00
Zinc oxide	10.00	0.0	26.00	26.00	8.00
Iron oxide	0.0	0.0	0.0	0.0	5.00
Slate dust	0.0	0.0	0.0	0.0	4.00
Sulphur	4.25	3.90	2.00	2.00	1.00
Antimony	5.00	17.25	0.0	0.0	15.00
Hexamethylenetetramine	0.50	0.39	0.0	0.0	0.0
Paraffin	1.00	0.0	2.00	2.00	0.0
Whiting	0.0	0.0	12.00	12.00	0.0
Litharge	0.0	0.0	6.00	6.00	0.0
Time of cure	1 hr. 15 m.	1 hr. 15 m.	25 min.	45 min.	15 min.
Temperature of cure	137.8° C. (280° F.)		154.4° C. (310° F.)		
Calculated specific gravity	1.100	1.091	1.588	1.588	1.651

Table III contains the results of analysis of the samples listed in Table II for the determination of rubber as compounded by the new method and are illustrative of the results obtained by the method as used by the Bureau of Standards.

In comparing results obtained for rubber as compounded with the value stated by the compounder to be present, the calculated and determined specific gravities should also be compared. Any errors introduced in compounding the samples or in their analysis would be indicated by this comparison. Thus, if a sample has a calculated gravity of 1.5888 and is said to contain 40 per cent of rubber, and if the determined specific gravity is 1.607, then the sample contains more inorganic materials than was planned and is therefore lacking in rubber content. The case given is that of 206-25 and is also true of 206-45.

[4] Bureau of Standards, Scientific Paper 174.
[5] Bureau of Standards, Circular, 38, Fourth Edition.

TABLE III.—ANALYSIS OF EXPERIMENTAL COMPOUNDS BY NEW METHOD

MATERIAL	*A*-1	*A*-2	206-25	206-45	207-15
Acetone extract	3.05	2.63	3.26	3.36	1.37
Chloroform extract	0.27	1.44	0.59	0.43	0.36
Total inorganic materials (corr.)	15.53	12.44	56.62	56.90	56.86
Total sulphur (corr.)[a]	5.22	7.30	1.95	1.95	4.33
Specific gravity	1.062	1.057	1.607	1.609	1.648
Rubber hydrocarbon	75.93	76.19	37.58	37.36	37.08
Rubber as compounded[b]	79.25	80.0	39.46	39.23	38.81
Rubber by volume	89.54	89.96	67.46	67.15	68.04
Rubber as compounded (Table II)	79.25	78.40	40.00	40.00	37.00
Free sulphur	3.17	3.86	1.07	0.48	2.04
Calculated specific gravity (Table II)	1.100	1.091	1.588	1.588	1.651

[a] This value does not include sulphur in combination with the compounding materials, but includes sulphur added as such and that added as available sulphur in the ingredients used, such as the free sulphur in commercial antimony pigments.

[b] Rubber hydrocarbon plus 5 per cent of its weight is taken as "rubber as compounded," except when the sum of the acetone and chloroform extracts is less than the figure represented by the arbitrary 5 per cent. In the latter case, rubber as compounded is considered as the sum of rubber hydrocarbon, acetone extract corrected, and chloroform extract.

A modification of the method given above has been found useful in this and in other laboratories for quantitatively separating rubber compounds from frictioned rubber goods, such as rubberized cloth and asbestos materials. It makes possible an examination of the fibers used in weaving the fabric and an analysis of the rubber compound.

Chemical Patents

The United States

FUSIBLE CORE FOR HOLLOW VULCANIZABLE ARTICLES. A fusible core or filler formed of a fused mixture of compounds of potassium and sodium with nitrogen-acid radicals.—W. A. Gibbons, Little Neck, N. Y., assignor to The Hartford Rubber Works Co., Hartford, Connecticut. United States patent No. 1,523,519.

PRODUCTION OF VULCANIZED RUBBER PRODUCTS. A vulcanizable compound comprising rubber, a vulcanizing agent, and a partially decomposed protein plasticized with a basic nitrogenous organic vulcanization accelerator.—H. O. Chute, New York, N. Y. United States patent No. 1,523,755.

GOLF BALL AND METHOD OF COVERING. A mixing is made of balata, sulphur, an accelerator of the dithio carbonic acid series and a light colored pigment, and forming the mixture into cover parts for application to a center of tense, vulcanized rubber windings, molding and partly curing the cover on the ball in a heated mold and allowing the cure to continue in air at a lower temperature.—William C. Geer, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,524,428.

RUBBER COMPOUND. As an ingredient of a rubber compound, finely ground oyster shells.—F. J. Baumgardner, assignor of one half to F. L. Phipps, both of Cleveland, Ohio. United States patent No. 1,524,500.

The United Kingdom

RUBBER COMPOSITION. A socket for use with the holding-down bolts of railway chains is made from the following mixture: rubber, 100; ground tire waste, 400; ground inner-tube waste, 100; mineral pitch, 100; sulphur, 60; lime, 4; diphenyl guanidine, 4; wood meal, 225.—W. A. Harrocks and Ferodo Ltd., Chapel-en-le-Frith, Derbyshire. British patent No. 225,070.

VULCANIZING RUBBER. Zinc α phenyl biguanide is used as an accelerator of vulcanization. Typical mixing: 86 parts of smoked sheet, 10 parts of zinc oxide, 2 parts of sulphur, and 2 parts of zinc α phenyl biguanide is vulcanized at 45 pounds steam in 20 minutes.—E. Smith, 17 Via Arsenale, Turin, Italy, assignee of Society Lombarda Gomma, Milan, Italy. British patent No. 225,866.

Germany

Patents Issued With Dates of Issue

407,998 (September 26, 1922). Method of making leather-like fabrics of rubber. Runge Werke, A. G., Spandau.

408,306 (May 21, 1922). Method of cold-vulcanizing rubber and rubber-like substances. Dr. Max Le Blanc and Dr. Martin Kröger, Linnéstrasse 2, Leipzig.

PARADURA

A new hydrocarbon ingredient for rubber compounding known as Paradura is announced as a softener for rubber mixings, at the same time producing a marked increase in tensile, resistance to tear, and abrasion and improving aging quality of the stock.

CHEMICAL ENAMEL

This special white enamel has been perfected for painting ceilings and walls of rubber factories, laboratories and work rooms of plants. The material successfully resists darkening by sulphur fumes, and the destructiveness of chemical vapors, humidity, ventilation, etc., as demonstrated by its use in various rubber factories, chemical plants, dye-works and other manufacturing concerns.

BALTIMORE MEETING OF THE AMERICAN CHEMICAL SOCIETY

The preliminary program has been published for the sixty-ninth meeting of the American Chemical Society to be held in Baltimore, Maryland, April 6 to 10. All divisions and sections except the Fertilizer Division will meet in Baltimore. The program of the Division of Industrial and Engineering Chemistry will include "A Quarter Century of Chemistry in Rubber," by W. C. Geer. The Rubber Division will arrange a symposium on either the "Measurement of the Plasticity of Rubber" or on the "Artificial Aging of Rubber by Oxidation." The Division will hold a dinner and smoker at 6 o'clock, Thursday evening, April 9.

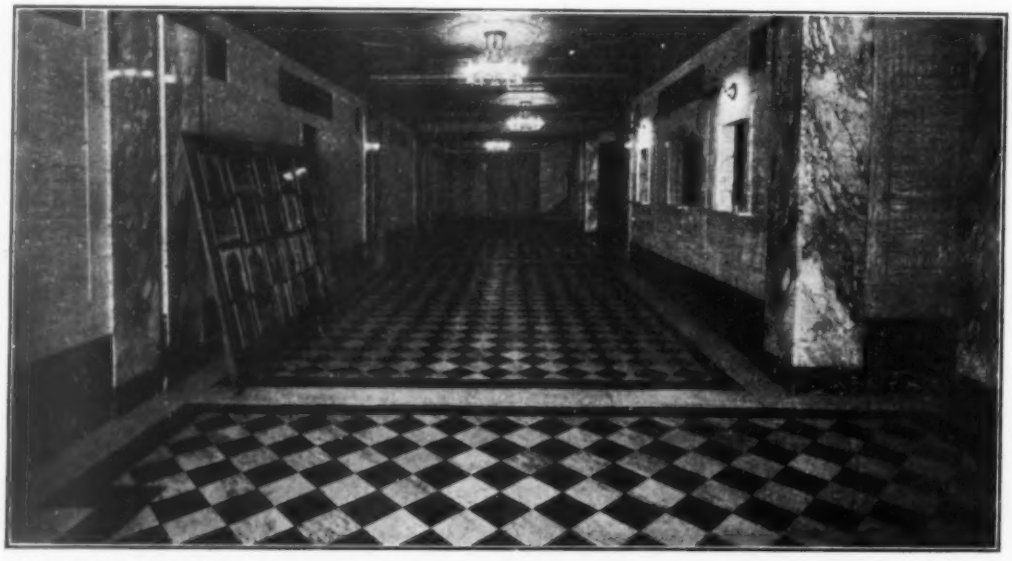
WATER ABSORPTION BY RUBBER

The cause of absorption of water by rubber is assigned by the Bureau of Standards to osmotic pressure due to soluble compounds which have not been removed by washing and occasioning loss of mechanical strength. Tests show that rubber immersed in distilled water absorbs much more water than when immersed in salt water. Also rubber washed before vulcanizing absorbed less water than when vulcanized unwashed. In some cases 30 per cent of water was absorbed without reaching saturation.

Osmotic pressure is that which the molecules of a dissolved solid exert on a surface through which they cannot pass, while the water molecules can pass through freely. Osmotic pressure is equal to the pressure an equal number of gas molecules would exert if confined in a space of equal size. A surface on which this action takes place is called a semi-permeable membrane. Layers of rubber surrounding small particles of soluble material are believed to act as semi-permeable membranes. Rubber placed in pure water takes up water and the dissolved material expands and decreases in pressure until the pressure exerted is just balanced by the tension of the rubber. Salt water has an osmotic pressure of its own, and when the osmotic pressure in the rubber cells gets down to that in the surrounding water further absorption of water ceases. In rubber this balancing of pressures occurs very slowly because the water must soak through the rubber as the expansion takes place. Some of the specimens at the Bureau of Standards have been soaking several months.

TRIMENES

Trimene accelerators are non-poisonous, non-crystalline, odorless and blend easily in rubber mixings. Trimene base is a water soluble pure accelerator well adapted for use in tire stocks, inner tubes and proofed fabrics. Trimene is a compound of trimene base and stearic acid. Its accelerating strength is half that of the base. It has a softening effect on the raw stock that aids mixing, calendering and tubing, without being carried into the vulcanized goods. It is especially valuable for use in footwear and mechanical rubber goods stocks.



Gladstone Tyre & Rubber Co., Inc.

TWO THOUSAND SQUARE FEET OF REINFORCED RUBBER FLOORING WAS LAID IN THE IMPERIAL THEATRE LOBBY, NEW YORK, AND AFTER EIGHTEEN MONTHS' CONSTANT SERVICE SHOWS NOT THE SLIGHTEST WEAR

The Editor's Book Table

Book Reviews

"MECHANICAL ENGINEERS' HANDBOOK." LIONEL S. MARKS, Editor-in-Chief. McGraw-Hill Book Co., Inc., New York and London. Second Edition, 1924. Flexible leather, 1986 pages, 5 by 7 inches. Tables, graphs and illustrations.

THIS handbook comprises valuable data for mechanical, chemical and other engineering specialists under the following section headings: I.—Mathematical Tables, Weights and Measures. II.—Mathematics. III.—Mechanics. IV.—Heat. V.—Strength of Materials. VI.—Materials of Engineering. VII.—Machine Elements. VIII.—Power Generation. IX.—Hoisting and Conveying. X.—Transportation. XI.—Building Construction and Equipment. XII.—Machine Shop Practice. XIII.—Pumps and Compressor. XIV.—Electrical Engineering. XV.—Engineering Measurements. Mechanical Refrigeration.

"GUMMI-KALENDER—1925." PUBLISHED IN COLLABORATION with the editor of the *Gummi-Zeitung* by Dr. Kurt Gottlob, Union Deutsche Verlagsgesellschaft, Berlin S. W. 19, Germany. Cloth, 302 pages, about 4 by 6 inches.

After an interval of ten years the Gummi Kalender makes its appearance again. This latest edition has been revised and brought up-to-date and contains properly tabulated pages in which technical memoranda may be entered. It also contains a list of organizations and associations of the German rubber industry, conversion tables, logarithms, specific gravity and various other tables of use to the practical rubber man, besides statistics regarding the rubber trade of Germany and other important manufacturing countries.

New Trade Publications

AN ILLUSTRATED BULLETIN, SETTING FORTH THE ADVANTAGEOUS features of Yarway Tandem Blow-Off valves, is being sent out by the Yarnall-Waring Co., Chestnut Hill, Philadelphia, Pennsylvania, manufacturer of power plant devices.

"MECHNICAL RUBBER GOODS FOR EVERY PURPOSE" IS THE title of an illustrated and attractively-printed catalog issued by the Pioneer Rubber Mills, San Francisco, California.

Recent Articles Relating to Rubber

Rubber Latex: Its Properties and the Development of Its Industrial Applications. In this paper, read at a joint meeting of the London Section and of the Institution of the Rubber Industry, London, November 17, 1924, the author presents a comprehensive review of research into the possibilities of industrial applications for rubber latex. Following an historical sketch the topics covered include the microscopical examination of latex; physico-chemical properties; reactions; latex as a colloidal system; the coagulation process, and applications in the rubber and other industries.—A. Van Rossem. *Chemistry and Industry*, January 23, 1925, 33 T to 41 T.

Rubber Latex Particles. A motion picture study of rubber latex particles.—E. P. Wightman and A. P. H. Trivelli. *Industrial and Engineering Chemistry*, February, 1925, 164. Illustrated.

A Remarkable Property of Selenium. Brief account of the remarkable flame-proofness imparted by selenium to cotton braided insulated wire.

Selenium may be used to flame-proof paper, scenery, and other diffuse materials, but the amount needed is relatively large. The effect appears to depend on surface action and the surface area is here quite great. Electric wire and probably other comparatively concentrated masses of combustible material are, however, economically protected. This is indeed fortunate, since the usual flame-proofing, which works fairly well on the more diffuse materials, is but poorly suited for insulated wire.—Ernest C. Crocker, *Industrial and Engineering Chemistry*, February, 1925, 164.

Phosphoric Derivatives of the Inositol of Hevea Braziliensis (Quebrachitol).—A. Contardi, *Annali di Chimica Applicata*, 1924, 4, 281-289.

Coagulation of Hevea Latex. A study of coagulation by acids. In "natural" coagulation the cause of coagulation is believed to be the acidity developed by bacterial action.—W. N. C. Belgrave, *Malayan Agricultural Journal*, 11, 348-370 (1923).

The Occurrence of "Rust" on Sheet Rubber. The conclusions of Hellendoorn that the occurrence of a "rusty" surface on sheet rubber is due to the growth of micro-organisms and that undue delay in drying sheet encourages such growth are confirmed. It is shown how "rust" may be avoided.—T. E. H. O'Brien and M. Park, *Rubber Research Scheme*, (Ceylon) Bulletin 31 (1923).

Front Wheel Shimmying. The conclusions reached are that the low pressure and thin sidewalls of balloon tires are the chief factors contributing to front wheel shimmying and that no acceptable changes in chassis design can be made to control it. A perceptible improvement in riding comfort and freedom from shimmying can be obtained by the use of a moderate design of balloon tire, not too thin a sidewall, proper width of rim, and medium air pressure.—W. R. Strickland. *Journal of the Society of Automotive Engineers*, February, 1925, 227-231. Illustrated.

Prevention of Shimmying. The author concludes that relief is to be found in the mechanical features that control the tires.—R. B. Day, *Journal of the Society of Automotive Engineers*, February, 1925, 192-194.

Effect of Balloon Tires on Car Design. Inasmuch as the use of low-pressure tires has become established, the conditions of car design affected by them are reviewed, particular reference being made to the members of the chassis included under the term "unsprung weight," namely, the axles, the wheels and the tires.—J. W. White, *Journal of the Society of Automotive Engineers*, February, 1925, 205-208. Illustrated.

Wheel Shimmying; Its Causes and Cure. Shimmying is an oscillating motion produced by repeated impacts or forces in the linkage of a mechanism that lacks stability or has become loose because of wear. The effect is discussed of periodic forces between tires and roads; stiffness of springs versus inflation pressure; instability of balloon tires, and effect of alternating forces.—O. M. Burkhardt, *Journal of the Society of Automotive Engineers*, February, 1925, 189-191. Illustrated.

Glimpses of Balloon Tire Progress. Origin and development of the balloon tire. Discussion of tire sizes; rim widths; plies of cord fabric; tread profile; tread configuration; inflation pressure; punctures and bruises; loss of air from tubes; sounds and noises, and shimmy.—B. J. Lemon, *Journal of the Society of Automotive Engineers*, February, 1925, 172-182. Illustrated.

Second Progress Report of the Sub-Committee on Benzol, Chemical Section, National Safety Council. Louisville Safety Congress, September 29—October 3, 1924. Benzol is reported a very real industrial hazard. Local exhaust ventilation at the point of origin of vapors appears to be a highly efficient procedure for avoiding benzol poisoning.—National Bureau of Casualty & Surety Underwriters.

Studies of the Physical Properties of Balata and Rubber. A study of balata and balata-rubber mixtures.—C. R. Park (Goodyear Tire & Rubber Co., Akron, Ohio). *Industrial and Engineering Chemistry*, February, 1925, 152-160. Illustrated.

The Influence of Inorganic and Organic Vulcanization Accelerators on the Specific Temperature of Rubber Mixings During Vulcanization. II. (German) *Gummi-Zeitung*, January 30, 1925, 572-576. Graphs and tables.

Thermal Effects on the Plasticity of Crude Rubber. Tests show that varying the temperature of crude rubber mixtures results in a sudden and profound change in the physical properties of the material. In a state of rest the plasticity diminishes to a certain limit which is reached in a few hours with heat and in several days in the temperature of the atmosphere. In the first case stirring the mass will completely restore plasticity but in the second only partly. The effect of heat in the plastification of rubber varies for different types of rubber; quantitively it is practically equal for crêpe and smoked sheet, almost double for slab and barely half for hard Pará.—B. Marzetti, *Giornale di Chimica Industriale ed Applicata*, December 1924, 567. Graphs, tables.

Vulcanization and Accelerators. Part II. Natural and Mineral Accelerators. Serial. André Dubosc. *Rubber Age*, New York, January 25, 1925, 264-265.

The Vulcanization of Rubber and the Aging of Vulcanizates as Gel Reactions. (German). H. Feuchter. *Kolloidchemische Beihefte*, 20, 1924, 78-137.

The Treatment of Rubber Previous to Vulcanization. Effects of plantation processes; plasticizing by mastication; plasticity tests; storing and remastication.—Samuel S. Pickles, *India Rubber Journal*, January 3 and 10, 1925, 33-34, 66-69. Graphs.

Mechanical Structure of Rubber. Application of the synthetic method which consists in studying the behavior of rubber under all kinds of forces, in all kinds of conditions of vulcanization and temperature, etc., and endeavoring to explain this behavior in terms of a definite mechanical structure. The author develops his explanation of the physical properties of rubber based on his hypothesis of the existence of an internal spring structure in rubber. The paper is followed by an interesting discussion.—A. Healey, *Rubber Age*, London, February, 1925, 621-630. Graphs.

Accelerators of Vulcanization—III. Serial (French). Discussion of organic accelerators by groups as follows: 1, basic accelerators; 2, derivatives of nitrogen; 3, derivatives of carbonic and thiocarbonic acids; 4, aniline colors; 5, albumenoids; 6, miscellaneous accelerators and compositions.—F. Boiry, *Revue Générale du Caoutchouc*, January, 1925. 3-6.

FOREIGN RUBBER TRADE INFORMATION

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C. The publications which give details of the rubber industry in some one country are marked with an asterisk.

NUMBER	SPECIAL CIRCULAR
746	"Automotive Registration in Cuba," etc., etc.
*748	"December Imports of Tires and Tubes."
755	"Tire Market of Santo Domingo, D. R.," etc., etc.
*759	"Retail Tire Prices in Belgium."
*763	"Retail Tire Prices in Switzerland."
*766	"Egyptian Market for Rubber Waist-Belts."
*767	"Retail Tire Prices in France."
768	"Rubber and Canvas Hose for South African Railways," etc., etc.
769	"Rubber Footwear Industry Active in Canada," etc., etc.
*770	"Market for Rubber Heels in the Baltic Countries."
*771	"Egyptian Market for Machinery Belting."
774	"Market for Rubber Heels in Quebec, Canada," etc., etc.
*776	"Market for Rubber Heels in Chile."
*779	"Possible Market for Rubber Shoes in St. Michael's, Azores."
784	"Market for Rubber Heels in Callao-Lima, Peru." etc., etc.

SALES OF AMERICAN-MADE ELASTIC WEBBING TOTALED, ACCORDING to *Commerce Reports*, 9,424,000 yards in July, 1924, and 9,862,000 yards in the month following. There is a decline however of 27.7 per cent in the combined sales for the first eight months of 1924, the total being 83,983,000 yards, as compared with 116,140,000 yards, the figure for the corresponding period of 1923.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

NUMBER	INQUIRY
540	Who makes a tire casing with green walls.
541	Where deresinated rubber may be obtained.
542	Address of manufacturer of machine for plaiting bathing caps.
543	Who manufactures rubber window cleaners and squeegees.
544	Who makes a rubber disk to go on a two-bladed canoe paddle to prevent water from running down the handle when raised.
545	Address of manufacturer of toy balloons.
546	Where a machine for vulcanizing tennis soles to uppers may be obtained.
547	Address of manufacturer of "Dig-U-Out" shoe.
548	Who manufactures flying rubber birds.
549	Who makes a machine for folding the rubber around the metal cap of an ice bag.
550	Source of supply of gold pigment which will hold its color during vulcanization.
551	Information concerning and source of supply of oil soluble colors.
552	Address of manufacturer of metal frames for attaching rubber to automobile foot pedals.
553	Where asbestos wool may be obtained.
554	Source of supply of materials of which thermo-plastic talking machine records are made.
555	List of manufacturers of bathing caps and rubber toys.
556	Addresses of manufacturers of medium priced tires and tubes suitable for export.
557	Who makes cheap composition rubber belts for men's wear.
558	Addresses of American manufacturers of black adhesive tape.
559	Address of manufacturer of rubber floor mats of various sizes and shapes.
560	List of manufacturers of sponge rubber toys, and dealers in same.
561	Where rubber buttons for garters may be obtained.
562	Address of manufacturer of 2-inch inflated rubber balls.
563	Information on electric needle for cutting rubber.

Foreign Trade Opportunities

Address and information concerning the inquiries listed below will be supplied to our readers through the Foreign Trade Bureau of The India Rubber World, 25 West 45th Street, New York, N. Y.

NUMBER	COUNTRY AND COMMODITY	PURCHASE OR AGENCY
13,288	Chile—Cotton goods (osnaburgs)	Purchase
13,305	Norway—Ducks and denims	Agency
13,363	Egypt—Cheap automobile tires	Agency
13,434	Argentina—Cotton duck	Agency
13,439	Belgium—Tires	Agency
13,451	Canada—Fire hose	Purchase
13,452	South Africa—Rubber jars for automobile batteries	Purchase and agency
13,453	England—Knee boots	Purchase and agency
13,454	France—Used tires, automobile and bicycle	Purchase and agency
13,455	Finland—Pneumatic tires for automobiles and trucks	Purchase
13,456	Austria—Rubber overshoes	Agency
13,457	Germany—Rubber goods, technical, for mines and mining industries	Purchase
13,458	Czechoslovakia—Tires and tubes	Agency
13,508	Germany—Carbon black	Agency
13,526	Belgium—Automobile tires	Agency
13,544	Italy—Rubber goods, industrial and technical, and transmission belts	Purchase
13,546	Hungary—Rubber shoes and tennis and gymnasium shoes	Purchase and agency
13,559	Indo-China—Rubber belting	Agency
13,578	Belgium—Waterproof tissue, oilskin cloth and waterproof garments	Agency
13,581	Egypt—Cotton duck	Purchase
13,601	Poland—Druggists' sundries	Agency
13,602	Germany—Rubber products	Purchase and agency
13,603	Poland—Rubber goods, technical and surgical	Agency
13,604	Germany—Rubber goods and belting	Agency
13,605	Sweden—Waist belts	Purchase and agency
13,613	Hungary—Automobile tires and accessories	Purchase and agency

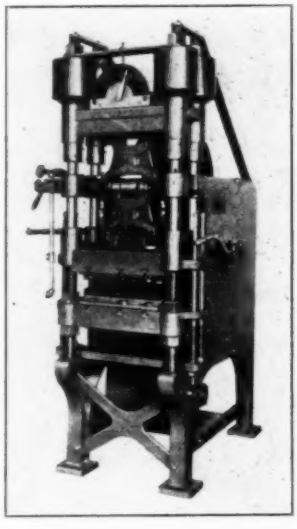
ACCORDING TO STATISTICS PREPARED BY *Commerce Reports*, THE fabric consumption by American tire manufacturers totaled 9,789,000 pounds in July, 1924, and 12,471,000 in the month following. The total consumption for the first eight months of 1923 is estimated as being 86,924,000 pounds, as compared with 91,677,000 pounds for the corresponding period of 1924, an increase of 5.5 per cent.

ACCORDING TO COMMERCE REPORTS, 699,485 GROSS OF FOUNTAIN pens, value $917,927, were exported from the United States during 1924, as compared with shipments during 1923 of 186,412 gross, value $181,946.

New Machines and Appliances

Mechanical Spring Molding Press

HERE illustrated is a strictly mechanical press operated by electric motor, having a powerful movement consisting of compound gearing, cam and toggle, and special springs acting as an accumulator and maintaining the pressure while curing.



Terkelsen Mechanical Spring Press

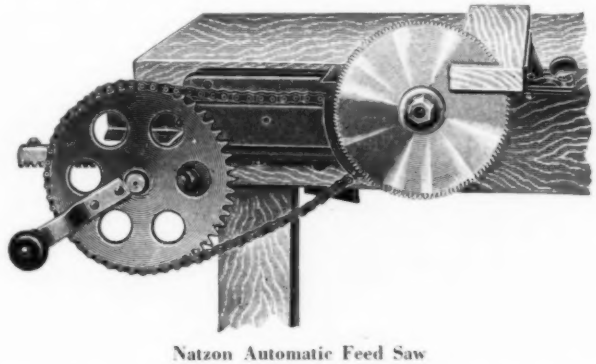
When used as a semi-automatic press the molds should be constructed to fit the press. It can also be used as a plain press with hand operated molds without delay in changing from one to the other.

In operation the upper die block or platen moves downward rapidly to within 3/16-inch of closing point, then very slowly to allow material to flow until fully closed. Then the clutch is thrown out automatically and full pressure is held by springs at top of the press. Full pressure is maintained indefinitely, without power consumption. When the work is cured, pressure is released, the power-storing springs also release and the upper die block moves rapidly upward automatically lifting the extractor bar, which ejects the work and is stopped automatically at its highest point.

These presses are specially adapted for molding articles from quick curing materials under uniform pressures adjustable from one to 50 tons. They are operated by individual motor drive at low operating cost.—Terkelsen Machine Co., 326 A street, Boston, Massachusetts.

Bench Hand Power Saw

A most convenient hand power circular saw for wood, rubber or the various hard compositions used for radio panels, is here illustrated. The frame of the machine is gray cast iron. Movement of the section which carries the saw with relation to the stationary portion of the frame is provided for by a machined dove-tailed slide. Automatic feed is secured by rack and pinion. The saw is six-inch standard make and specially designed. All gears are machine cut, driven by silent type chain. The machine is easily attachable to the end of a work bench, its table even with the top of the bench. The adjustable cross cut and miter gage is set by a thumb screw, at any angle and supports the board stationary in the desired position.

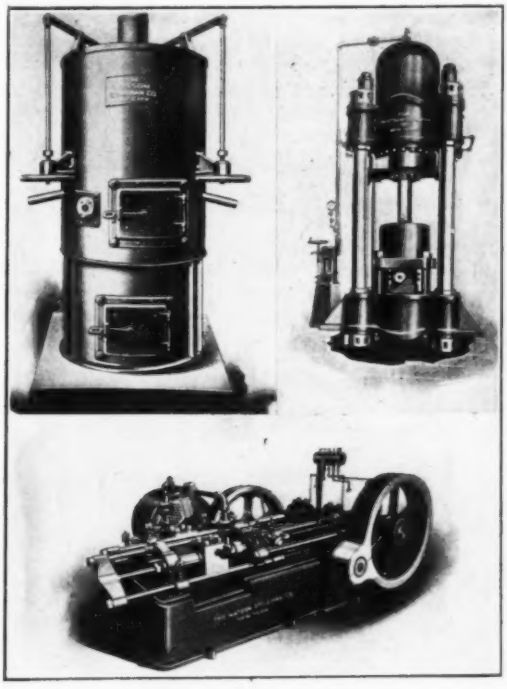


Natzon Automatic Feed Saw

Besides being of great value as it is in the carpenter or repair shop of any factory, this saw by substitution of a cutting disk for the saw might find many useful applications in rubber working, as for example cutting slab stock into tiles, tile feature joints, samples of hose, etc.—Natzon Saw Co., 5518 Euclid avenue, Cleveland, Ohio.

Lead Covering Equipment for Molded Hose

The encasement with metal of hose to be completed by the molding process requires the use of three special pieces of equipment, typical forms of which are here pictured. These consist of a lead melting furnace, a hydraulic lead extruding press, and a powerful pump.



Watson-Stillman Apparatus for Lead Covering Molded Hose

Lead Furnace

The lead melting furnace is arranged for firing with either coal or coke, and with provision for using oil or gas burners, if desired. The furnace is provided with hand operated valves to control independently the outlet of fluid metal from discharge spouts on opposite sides of the lead pot. One furnace is suitable for supplying two lead presses, and is usually located between them. The capacity of the lead pot is 6,000 pounds of lead.

Lead Press

The 2,100-ton lead covering press complete with lead container, plunger, lead die block, operating valve, gage, piping, etc., is shown in the illustration. This type of press is used for

covering either hose or cable with lead. The maximum pressure exerted on the ram is 2,100 tons. The weight of lead it can extrude at one charge is about 1,000 pounds. This is sufficient to cover 500 to 600 feet of garden hose of ¾-inch size or smaller.

These presses are made with hydraulic cylinder overhead or below, the other details being the same. Independent brass lined pull back cylinders are used instead of making the main ram double acting. The main ram is copper lined but there is no bearing of the ram on the liner, and consequently no possibility of the liner being injured in service. The packings are easily accessible without removing the ram. The moving platen is guided by adjustable bronze shoes. The main castings are of open hearth steel and the main ram is a solid chilled casting ground to almost a mirror finish.

The press is controlled by a one-hand-wheel operating valve. It controls all movements of the press and also bypasses pump when press is not in operation.

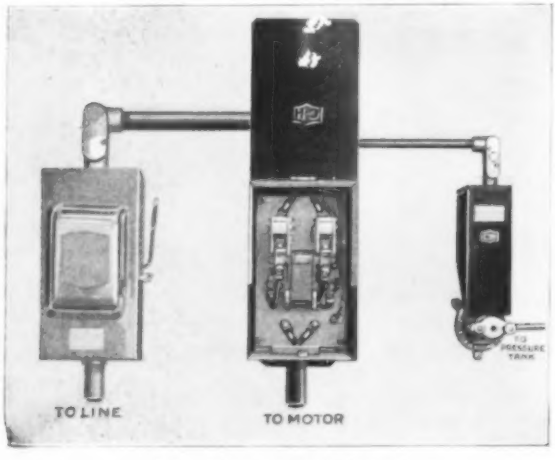
Pump

The type of pump used with the lead press is also shown. This pump is arranged for direct gear drive for belt or chain drive, if required. From 40 to 50 horsepower is usually needed for running one lead press of the 2,100-ton size.

The complete installation of a press, pump and furnace has a capacity of covering approximately 1,000 feet of garden hose an hour. Additional equipment is also available for adapting the press for the use of previously cast lead slugs, considerably increasing the speed of operation.—The Watson-Stillman Co., 50 Church Street, New York, N. Y.

Automatic Pressure Tank Control

The illustration shows a typical safe wiring and installation arrangement for the automatic control of a small alternating current single phase motor-driven pump outfit. The main line switch is of



Cutler-Hammer Tank Control

the enclosed outside-operated type mounted beside the Cutler-Hammer double pole magnetic switch and pressure-actuated switch. The latter is connected by pipe to the tank and electrically to the magnetic coil of the magnet switch. When the pressure in the tank drops to a predetermined low value the magnetic switch is caused to close, thus automatically connecting the motor on the line. When the pressure reaches the desired high value, the pressure switch opens, the magnetic switches drop out, and the motor and pump come to rest.—The Cutler-Hammer Mfg. Co., Milwaukee, Wisconsin.

Drum Built Tire Expanding Machine

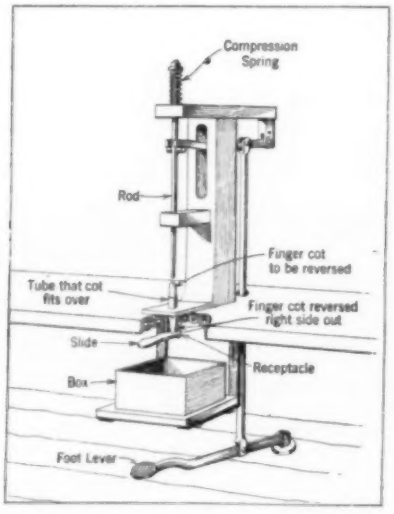
The improved expanding machine, here illustrated, built for forming tire carcasses in the flat drum building method has a number of exclusive features and advantages. It is adjustable for any size 30 by 3½-inch clincher tire. The core segments are held in perfect alinement by three-point attachment to the central members or hubs. The machine has also adjustable guides for centering the tire. The machine is shown mounted on an individual stand. Where production requires more than one unit this stand is omitted and several machines are mounted on a revolving table. By this arrangement a single operator can handle all of the machines without moving from his post.

Flat Tire-Band Expanding Machine

The machine is inexpensive, durable and easily operated by compressed air. The expanding action of the core is smooth and even.—The Akron Standard Mold Co., Akron, Ohio.

Machine for Nesting and Reversing Finger Cots

In the manufacture of finger cots by the dipping process the articles are built up on forms by repeated dippings, and cured, after which they are removed from the forms. Removal is effected by reversing the cots as they are removed from the forms. This requires that the cots shall be again reversed to bring them right side outermost. The device here sketched represents a simple, practical machine designed not only to turn the reversed finger cots right side out but also to nest the cots in groups of three sizes, large, medium, and small.



Hadfield Finger Cot Reverser and Nester

The machine consists of a vertical solid rod to which a downward stroke is imparted by a foot lever acting against a compression spring located on the top of the rod to raise it to its position of rest. Below the vertical rod stands a tube, over the top of which is loosely placed a finger cot to be reversed. As the rod descends it strikes the closed end of the cot, turns it downward into the tube, and reverses the cot as it descends into the stall or receptacle. The nested cots are discharged from the receptacle into the box by operating a slide.

By reversing a large, a medium, and a small cot in that

order, the three are nested as a group ready for boxing. In case nesting is not required the operator withdraws the slide and allows the cots to drop in bulk into a tray.—John Hadfield, 174 Cole avenue, Akron, Ohio.

Pressure Temperature Recorder

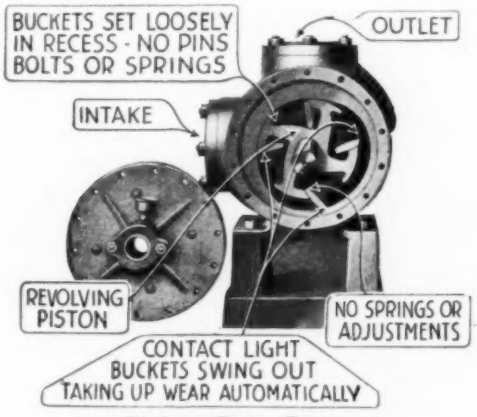
Columbia Strip Chart Recorder

A newly designed recorder of the strip or continuous chart type is here pictured. It is intended for application where desirable to obtain a record of temperatures or pressures over an extended period of time and where the cycles of operation are of relatively short duration, requiring a wide, open record enabling detection and study of the slightest variations. The instrument is furnished for recording all pressures of steam, air, water, ammonia, etc., also vacuum pressure as well as temperatures up to 1,000 degrees F.

The chart is 6 inches wide with effective recording area of 4½ inches by 90 feet. The clock movement is especially constructed and moves the chart 6 inches an hour. An automatic rewind device takes up the recording chart. American Schaeffer & Budenberg Corporation, Brooklyn, N. Y.

Adjusting Rotary Pump

One of a variety of simple and efficient rotary pumps adapted to handling water for industrial purposes is here pictured. Such pumps are well adapted to the needs of manufacturers of rubber goods and reclaimed rubber. This pump utilizes centrifugal force,



Blackmer Rotary Pump

not only to pump liquids but also to take up its own wear as rapidly as possible.

The buckets sit easily in recesses of the revolving piston and ride lightly but smoothly against the cylinder wall, held there by centrifugal force. Thus, without springs, bolts, pins, or other mechanism, or the need for adjustment by the operator, they take up the wear as rapidly as it occurs, and maintain high pumping efficiency after years of service.

Semi-steel and acid resisting metals are used in the construction of these pumps to withstand the chemical or physical nature of the fluid to be pumped.—Blackmer Rotary Pump Co., Petosky, Michigan.

Improved Tire Changer

The tire changer here illustrated was first exhibited at the recent Chicago exhibit of the Automotive Equipment Association, and has been designed for use with all kinds of rims.

Manley Improved Tire Changer

The operating mechanism consists of three accurately machined jaws having a uniform radial motion from the center. The leverage is unusually efficient and has 2½ times the speed of any other tire changer. The jaws move a distance of 6 inches by turning the handle 15 times. The device handles split rims and solid rims, as well as rims on wire wheels or disk wheels demountable at the hub. There are no concealed parts, all being exposed to view for lubrication and inspection.—The Manley Manufacturing Co., York, Pennsylvania.

Machinery Patents

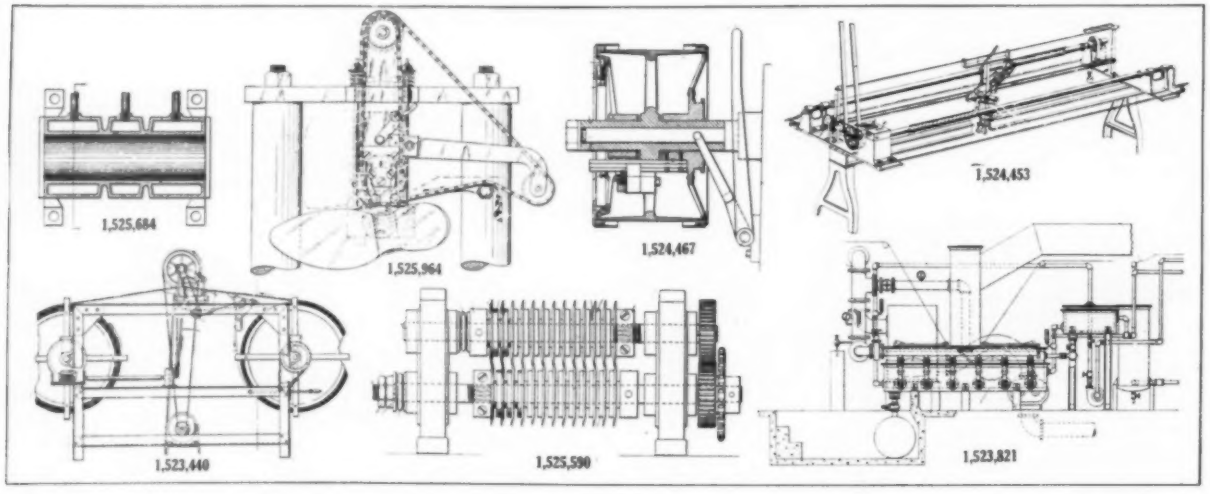
The United States

(1,523,440). METHOD AND APPARATUS FOR PRESSING LAMINATED MATERIAL. A method and machine for stripping sheet rubber, rolled in a cloth liner, laying upon the separated sheet rubber by hand fabric pieces which are attached in close contact with the rubber by the tamping action of a bar acting against an anvil roll between which the laminated material passes by the operation of the mechanism.—F. J. MacDonald, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,523,440.

(1,523,821). PROCESS AND APPARATUS FOR CONCENTRATING FLUIDS. The object is to provide a simple and economic process for concentrating rubber latex. The apparatus comprises a closed jacketed tank in which ammoniated latex is heated by circulation of warm water in the jacket. Heated air is discharged by a blower through the latex and over it, the latter to stop foaming. It has been found practicable to concentrate latex to about 72 per cent solids without formation of an excessive amount of coagulum. —John McGavick, Elmhurst, assignor to General Rubber Co., New York, both in New York. United States patent No. 1,523,821.

(1,524,453). APPARATUS FOR WRAPPING UNCURED TUBES FROM CURED TUBES. A double lathe machine on either side of which are supports for tube mandrels and between them a device through which the wrapping is automatically unwound from one mandrel and wound up on the opposite one, being reversed during its travel and smoothly laid on the fresh tube with the same edge overlapping.—Joseph E. Perrault, assignor to Hood Rubber Co., both of Watertown, Massachusetts. United States patent No. 1,524,453.

(1,524,467). TIRE BUILDING DRUM. The application to a tire building drum of a pair of ply-separating rings of a diameter



greater than the drum. Means for supporting the rings for movement at will and from overhanging relation with the drum, one of the rings being demountable to permit removal of a completely built-up band. The apparatus facilitates building in the beads while the drum is being revolved.—Adrian O. Abbott, Jr., assignor to Morgan & Wright, both of Detroit, Michigan. United States patent No. 1,524,467.

(1,525,590). SLITTING MACHINE. Traveling sheets are slit into narrow strips by passage between beveled edge flexible disk cutters spaced on shafts geared together and driven from a source of power. By the endwise adjustment of one of the shafts relative to the other, and the deflection of the disks, all the disks of one shaft are held pressed against those of the adjacent shaft with sufficient firmness to give a smooth accurate cut and without any danger of the material being forced in between the edges of the cutters.—Joseph E. Perrault, assignor to Hood Rubber Co., both of Watertown, Massachusetts. United States patent No. 1,525,590.

(1,525,684). APPARATUS FOR UNITING TUBES. A cylindrical mold with a separate water jacket section at each end and a steam jacket section between them for limiting the curing heat to a short splice of the tube ends. The mold has a longitudinal slot with a removable cover to allow the spliced tube to be placed in and removed from the mold. By vulcanization with heat the joint is formed without folding the tube, so that there is no distortion of the rubber and the rubber adjacent to the tube is kept at sufficiently low temperature to prevent weakening the rubber.—Joseph G. Moomy, assignor to Mary H. Moomy, both of Erie, Pennsylvania. United States patent No. 1,525,684.

(1,525,964). MACHINE FOR TRIMMING RUBBER SHOES. A machine substitute for hand shears designed for trimming away the superfluous lining around the opening of a rubber shoe. The trimmers are chain-driven circular disk knives, and inside and outside rotary feeding mechanism permits a shoe to be positioned and fed circuitously by its top margin so that the cutting disks may sever the excess lining from the margin engaged.—E. W. Sprenkle, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,525,964.

Other Machinery Patents

The United States

1,524,684 Braiding machine. F. H. Beyea, assignor to J. R. Gammeter, both of Akron, Ohio.
1,524,769 Vulcanizing tool. J. L. Webb, Salt Lake City, Utah.
1,524,861 Tire-making machine. F. H. Grove, Columbiana, Ohio.
1,524,866 Tire vulcanizer. I. W. Hughes, assignor to Rubber Products Corporation, both of Oakland, California.
1,525,087 Apparatus with tubular rubber core, for molding conduits. T. E. Murray, Brooklyn, New York.
1,525,286 Battery jar testing apparatus. J. R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.
1,525,455 Tire building apparatus. D. F. Logan, assignor to The Fisk Rubber Co., both of Chicopee Falls, Massachusetts.
1,526,046 Tire mold. W. A. Brubaker, Akron, Ohio, assignor to himself and C. Niemeyer, Little Rock, Arkansas.

The Dominion of Canada

246,457 Tire bead core. J. R. Gammeter, Akron, Ohio, assignee of F. H. Beyea, Union Spring, New York, both in U. S. A.
246,551 Tire core. The Bawden Machine Co., Ltd., Toronto, Ontario, assignee of Peter de Mattia, Clifton, New Jersey, U. S. A.
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246,555 Tire core. The Bawden Machine Co., Ltd., Toronto, Ontario, assignee of Barthold de Mattia, Clifton, New Jersey, U. S. A.
246,903 Mixing machine. The Canadian Consolidated Rubber Co., Ltd., Montreal, assignee of E. Eger, Detroit, Michigan, U. S. A.

The United Kingdom

225,753 Apparatus for molding rubber articles. A. Boecler, 7 Pilldamsvägen, Malö, Sweden.
226,209 Device for making patterned sheets of India rubber. T. J. Mell, Akron, Ohio, U. S. A.

Process Patents

The United States

1,524,449 Method of making molded rubber toilet seats. D. S. Meyers, assignor to Mid-States Rubber Co., both of Evansville, Indiana.
1,524,820 Process for weaving elastic webbing. H. St. J. Guild, Jamaica Plain, Massachusetts.
1,525,988 Process of making desk pads. F. W. Hachtel, Akron, assignor to The Sun Rubber Co., Barberton, both in Ohio.
1,526,012 Method of manufacturing cushion tires. C. E. Rett, Akron, assignor to Lambert Tire & Rubber Co., Barberton, both in Ohio.
1,526,297 Process of making rubberized fibre composition. R. H. Morrison, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.
1,526,298 Process of making rubberized fibre composition. R. H. Morrison, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.
1,526,299 Method of making rubberized fibre composition. W. G. O'Brien, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

The Dominion of Canada

246,722 Method of manufacturing self-cooling tires without air tubes. Kuno Schragin, Berlin, Germany.

The United Kingdom

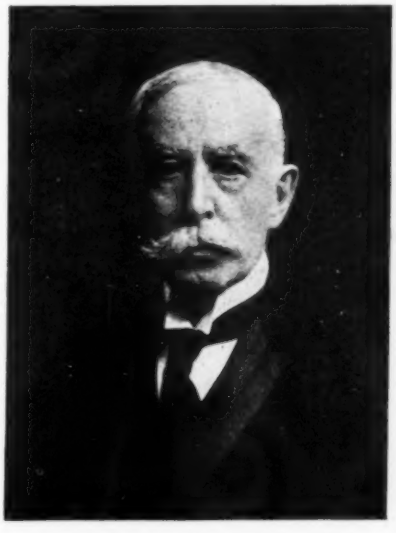
225,078 Method of ornamenting rubber. H. Frood, W. R. Sydee, and Ferode, Ltd., Sovereign Mills, Chapel-en-le Frith, Derbyshire.
225,215 Process of building cushion tires. Goodyear Tire & Rubber Co., assignee of R. S. Burdette, both of Akron, Ohio, U. S. A.
225,251 Method of making rubber compound sheet material. C. R. Collyer, Clyda, The Tow Path, Shepperton, Middlesex.
225,586 Method of repairing rubber articles by cold vulcanizing. J. Leadbitter-Smith and R. Delarageaz, 187 Sutherland avenue, Maida Vale, London.

The Obituary Record

Dean of the American Rubber Industry

FORMER Governor Augustus O. Bourn, of Rhode Island, and treasurer of the Bourn Rubber Co., of Providence, Rhode Island, died on January 29 at his home, "Seven Oaks," Bristol, Rhode Island, in his ninety-first year. He was stricken when apparently convalescing from an attack of pneumonia and heart disease which had lasted six weeks.

Mr. Bourn was born in Providence, Rhode Island, on October 1, 1834, and in 1855 was graduated from Brown University with the degree of A. M. He immediately joined his father in the rubber shoe business, which the latter had founded in the early forties, and on his father's death in 1859 became head of the concern. About 1870 this organization became merged with the National India Rubber Co., at Bristol, Rhode Island, an enterprise started by Mr. Bourn in 1867, and of which he was president and active manager.



Augustus O. Bourn

Following the reorganization of his company, about 1888, as a unit of the United States Rubber Co., Mr. Bourn retired and spent several years in Europe, returning to the United States in 1893. The following year he again entered the rubber shoe business, establishing in Providence, Rhode Island, the firm since known as the Bourn Rubber Co. In recent years there have been many additions to the plant, which now covers a whole city block, and the production of insulated wire has become a part of the factory output. Until very recently the upbuilding of this business had the daily attention of Mr. Bourn, who, as treasurer of the company, commuted regularly from his home in Bristol and continued to be a leading figure in the rubber industry.

No man in the rubber business had a wider experience than Mr. Bourn. He was acquainted with every detail of manufacture, as well as with the general management of the business. He introduced many new footwear styles and originated numerous innovations. As an investigator also he ranked high, his experiments in vulcanization, begun in 1903, being reported in an address at the Rubber Conference in New York in 1912 where they received the marked attention of all practical rubber men and chemists.

He served ex-officio as a member of the board of directors and executive committee of the Rubber Association of America, and was the second president of the New England Rubber Club, the predecessor of the above-named association.

In political affairs Mr. Bourn was very prominent. He was a member of the Rhode Island state senate from 1876 to 1883, when he was elected governor of the state. After serving two terms he was returned to the senate from 1886 to 1888, during which time he fathered the amendment to the state constitution which extends the right of suffrage to foreign-born citizens on the same conditions as to native-born. Following his temporary retirement from business in 1888 he accepted the post of United States consul general at Rome, Italy, which position he held with credit until 1893.

On the occasion of his ninetieth birthday, last October, Mr. Bourn was the recipient of many remembrances from friends and employes. At that time hale, hearty, active and forward looking despite his advanced age, he was considered the dean of the rubber trade, and it was hoped that he might enjoy years of life, health and activity in his many varied interests. He was the oldest former governor of Rhode Island and the oldest alumnus of Brown University.

Mr. Bourn is survived by two sons, Augustus O. Bourn, Jr., and Stephen W. Bourn, who were associated with their father in the Bourn Rubber Co.; two daughters, Miss Elizabeth R. Bourn and Miss Alice M. Bourn, both of Bristol; a sister, Mrs. Rachael Downs, of Cleveland, Ohio, and two cousins, William B. Bourn, of San Francisco, California, and Colonel Henry P. Eddy of Chicago, Illinois.

The funeral was held at St. Michael's Episcopal Church, Bristol, in the presence of a large attendance of distinguished men and women, with burial in Juniper Hill Cemetery.

Mr. Bourn was a member of the Rhode Island Sons of the Revolution, and in Masonry had advanced far and was one of the most prominent members in the state, having been a member of What Cheer Lodge No. 21, A. F. & A. M. for over sixty-five years. When a young man he went into the militia, enlisting in the Providence Horse Guards in 1861 and rising from private to the rank of lieutenant-colonel, a post which he held with the First Battalion of Cavalry. He was a member of the University and Art Clubs of Providence and numerous other clubs and societies. He was one of the founders of the Church of the Epiphany in Providence, and had been actively identified with St. Michael's Church in Bristol since his removal there in 1873.

Augustus O. Bourn was truly a man of many parts, scholarly and businesslike. His mental resources were varied, keen and vigorous, and he concerned himself with large affairs in many departments of human activity. As a veteran rubber manufacturer he established a reputation throughout the industry for business sagacity, technical knowledge and analytic research. He was also deeply interested in all science, especially astro-physics, on which he had written several treatises. The keen pleasure and good judgment with which he helped to solve the progressive governmental and legal problems of his day won for him the highest office in the gift of the people of his state. He was thoroughly devoted to his family and friends, and his extensive gardens and grounds at Bristol were a perennial joy, testifying to his knowledge and appreciation of horticulture.

In all his relationships with life he showed himself a man of high ideals and conduct, charitable yet firm in his convictions, kindly, courteous and dignified. He was a distinguished citizen for whom Rhode Island had both respect and affection. In the rubber industry he was similarly regarded and his passing will be widely regretted.

President of the Plymouth Rubber Co., Inc.

Abraham Bieringer, president of the Plymouth Rubber Co., Canton, Massachusetts, died at the Deaconess Hospital, Boston, Massachusetts, on February 7 after an operation when double pneumonia set in.

Born in the little village of Adelsheim, Baden, Germany, sixty years ago, he came to this country when a young boy and absolutely penniless. His first jobs at the beginning of his career consisted mostly of lifting heavy cases, doing wagon duty and such things in New York, N. Y. Later, in Boston, Massachusetts, he entered the cigar business and was for many years associated with the Bieringer-Hanauer Co., wholesale tobacconists.

At the time of his death he was a director of Alles & Fisher, Inc., manufacturer of the J. A. cigar, as well as president of the Plymouth Rubber Co., Inc. He was active only in the rubber business, however. His passing is a real loss to the industry.

He was a member of Germania lodge, A. F. & A. M., Hermann lodge, I. O. O. F. and was also actively interested in Moses Mendelsohn lodge, F. S. of I. His acquaintances speak highly of his honesty, integrity and fair mindedness. He was extremely reticent and disliked ostentation, but liberally philanthropic, donating to many charities in large sums and always without publication. Numerous poor families were supported by him unknown to anybody.

Factory Manager Federal Tire Plant

Arthur August Frank, factory manager and vice-president of the Federal Division of The Fisk Rubber Co., Cudahy, Wisconsin, on January 30 fell from the roof of Building 23A and was instantly killed.

A. A. Frank

Mr. Frank was a native of Wisconsin, having been born in Milwaukee on April 13, 1886, and was educated in the public schools, Milwaukee Academy and the University of Wisconsin. During his junior year in 1907 he left college to enter business. His first connection was with the Milwaukee Rubber Works, and he has stayed with the company during its various changes of management. Starting as a foreman, he steadily worked his way upward. When the company was succeeded by the Federal Rubber Manufacturing Co., he stayed as assistant superintendent, and since the present company took over the business made rapid progress to the superintendency and seven years ago was made factory manager.

He was a member of the American Society for Testing Materials, Tire & Rim Association, Milwaukee Association of Commerce, Society of Automotive Engineers, Old Timers Club, Milwaukee Athletic Club, Colony Club, Springfield, Massachusetts, Milwaukee Country Club, Chi Psi Fraternity, University of Wisconsin.

Beloved alike by associates and employes, a man of sterling character, fair minded, aggressive and indefatigable, who entered with enthusiasm into all the activities of the athletic, welfare and social organizations of his business and private life, his untimely death is a distinct loss to his business associates and many friends in the rubber industry.

THE USE OF RUBBER HEELS IS BECOMING INCREASINGLY POPULAR in Würtemberg and Baden, Germany. While rubber heels have been used in the district during the past 30 years, it was not until after the war that they were generally adopted by the public for daily wear. It is estimated that approximately 2,500,000 pairs of rubber heels are now consumed yearly in Würtemberg and Baden, with an aggregate population of about 4,700,000.

Automobile Saturation Point 27,000,000 Cars

Since the inception of the automobile about a quarter century ago there have been produced in this country some 24,000,000 automobiles, of which more than 1,000,000 have been exported, nearly 6,000,000 have worn out and about 17,000,000 are now in use. To buy and run these automobiles we have spent more than $40,000,000,000, a sum almost twice as great as our military expenditures during the World War.

What the automobile saturation point in this country will be has been much discussed. The most authoritative recent estimate was 18,000,000 cars. Now Leonard P. Ayres, vice-president of the Cleveland Trust Co., Cleveland, O., in a recent address has pushed the estimate ahead to 27,000,000 cars because there are approximately that number of families in the United States at the present time.

One car per family, he reasons, is the measure of ultimate use of the automobile, for the same reason that one bathtub and one telephone serve the needs of the family unit. Thousands of families will own more than one car and many business concerns will operate fleets of cars and trucks, but these extra machines will be offset by hundreds of thousands of families that cannot own even one automobile. With a margin of 10,000,000 cars between the number of automobiles now in use and the saturation point there are still ample opportunities for salesmanship.

Whether the industry can continue to make automobiles at the present rate depends upon the number of cars the American people will use at one time and on the average length of service. Cars wear out rather quickly, and the desire for a new one is never remote. The sustaining demand must come from the normal family with an average income of $2,000 a year. If there were no export demand and the number of cars in use should settle down to a constant of about 18,000,000, the average life of the cars will determine the number of new ones sold annually. If the average length of service were six years, the replacement requirement would be 3,000,000 a year, but as cars become better and last longer, this figure tends to shrink, so that if the length of life is eight years the number required to replace worn out automobiles will be only 2,250,000.

These considerations are of real import, because the annual producing capacity of American factories is probably at least 5,000,000 cars and the average length of service of cars now being made will probably be as much as eight years. These figures indicate that the industry in this country would now meet the replacement demand if 40,000,000 cars were in use, and that means that we have an excess of productive capacity.

The most serious problem confronting the automobile industry is the danger in bettering the quality, and increasing the length of service of the cars manufactured. During the past eight years the life of the average automobile tire has been increased from one year to two years, or doubled, while that of the average automobile has advanced from five to seven and one-half years, or an increase of 50 per cent.

It is evident that the industry has now entered the period of diminishing number of first purchasers, while the potential replacement demand has been cut down by the increasing length of service built into new machines. Because of the highly competitive nature of automobiles, the normal American citizen will continue to want new and better ones so long as automotive engineers can continue to design new cars featuring genuine improvements, in which there is an open and boundless field.

Sales prospects for 1925 appear to be distinctly good, because it is entirely probable that this year is going to be one of general business prosperity in this country. Forecasts of output for the industry have been numerous and diverse, ranging from a minimum of 2,500,000 passenger cars and trucks to a maximum of 5,000,000. Mr. Ayres estimates that the total output will be about 3,600,000.

New Goods and Specialties

Diving Suit of Specially Prepared Rubber

A NEWLY invented diving suit which is arousing interest in German shipping circles employs a specially prepared rubber and will enable a diver to remain under water for an hour at a depth of 500 feet. An enormous headpiece contains signalling, maneuvering, measuring and lighting mechanisms easily manipulated by the wearer. Compensatory weights and sinking weights are provided in the lower part of the trunk, and a special rubber is used for insuring watertight arms. The suit is the invention of Herr Gall, an engineer of Württemberg, Germany, and has stood exhaustive tests. Its particular sphere of usefulness will be in pearl and sponge fishing and in salvaging treasure from sunken ships.

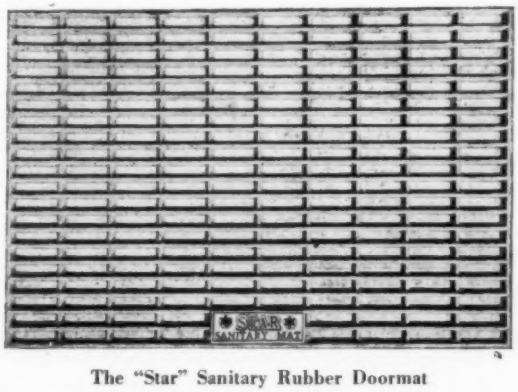
Kelly-Springfield Co.'s New Cord

The illustration shows the new method of construction of Kelly cords, employing an integral bead construction formed by strips of braided wire enclosed in the loops of the cord fabric, the cords forming the loops being continuous from the beginning of the inmost ply to the outermost. This, the manufacturers explain, insures unusual flexibility, allowing the tire to absorb the shocks of the road rather than resist them. A broad tough non-skid tread combined with the added flexibility of the carcass makes for longer life of the tire as well as for easier riding.—Kelly-Springfield Tire Co., 250 West 57th street, New York, N. Y.

New Construction of Kelly Cords

Corrugated Rubber Doormat

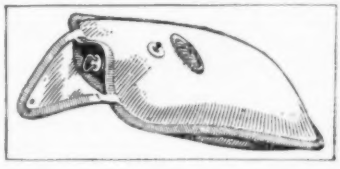
The rubber doormat has proved its efficiency and popularity. Difference in design, however, and in the rubber composition give constant variety in the models before the public. The design illustrated is a shoe scraper as well as wiper, the corrugations being deep and rigid.—Stern Rubber Products Co., Akron, Ohio.



The "Star" Sanitary Rubber Doormat

New Hot Water Bottle with Protected Stopper

The distinctive feature of the hot water bottle pictured is the flap handle, which can be used not only for hanging, as in the usual type of bottle, but when the bottle is in use the flap buttons down over the funnel opening, completely enclosing it and thus insuring against discomfort from the hot metal stopper. The flap also serves as protection against scalding when the bottle is filled, as it folds back over the hand, which is below the level of the opening.—P. B. Cow & Co., Ltd., 46-47 Cheapside, London, E. C. 2, England.



"Stalam" Hot Water Bottle

"Grippo" Pulleys of Rubber-Cork Composition

The manufacturers of the "Grippo" pulleys state that the firm rubber-cork composition will stand the hardest usage, in any climate, and that it entirely does away with loss of power or burning of belting through slippage and of the necessity for belt dressing or waxing or re-lacing. It insures longer life of lacing, minimizes noises caused by lacing and belt hooks, has all the advantage of a direct drive, and may be used in connection with any type or style of belting.—American Belting & Hose Co., East Water & Yamhill streets, Portland, Oregon.

Rubberized Dye Cape for Hairdressing Parlor

The adjustable dye and henna cape illustrated is made of the finest quality nainsook and waterproofed with pure rubber chemically compounded and guaranteed acid-proof as well as waterproof. It will fit any size neck snugly and comfortably and protect not only the wearer but the operator and the chair. The cape is 38 by 64 inches and weighs only 3½ ounces. It is very soft and lustrous and is long-wearing and easily washed.

The snap fasteners provided are secured by special tape which prevents pulling out and protects the cape against tearing. The adjustable snaps and special waterproofing are also featured in shampoo capes and aprons particularly adapted to the hairdressing and general beauty parlor trade. Booth curtains are also provided.—Pro-Tex Rubber Co., 2018 Amsterdam Avenue, New York, N. Y.

No. 15 Adjustable Black Dye Cape

Radio Vibration Eliminator Employs Rubber

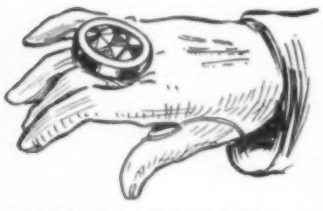
A device which, it is claimed, will nullify the effect of the most severe jar or shock on the mechanism of radio instruments employs a rubber bumper and spring suspension and is easily attached to any machine. On the larger instruments it takes the place of the casters, one being placed under each corner.—Security Manufacturing Co., 3051 Marcus avenue, St. Louis, Missouri.

Control Flow Syringe

The special feature of the hard rubber syringe illustrated is in the end piece to which the arrow points. By merely giving it a turn to the left the flow of water is increased and a turn to the right reduces it. The solution may be medicated by first removing the end piece and detaching the barrel, thus revealing the cone-shaped divide indicated by a white space on the illustration. Into this the medication is placed and the syringe is put together again ready for use. The flow of water is circular, whirling, and undivided, giving equal pressure in all directions. Hose connection to any ordinary faucet is provided.—Control Rubber Co., 123 Clinton avenue, Brooklyn, New York.

Adjustable Tip Regulates Flow

Finger Ring Reflector in Rubber Setting



Jenks' Reflector Ring for Motorists

A signalling device which attracts attention more directly than the mere thrusting out of a hand when the motorist is announcing a turn consists of a red rubber ring large enough to fit over the middle fingers of a gloved hand and molded to hold a many faceted lens which picks up the light and reflects it to the rear. This is an inexpensive device, marketed by H. Jenks, Ltd., 54 Ebury street, London, England.

The Original Brake Scooter Improved

The 1925 model of what is called the original brake scooter employs rubber generously, in its oversize tires giving balloon effect and in its corrugated foot pad and handle bars. This is a very attractive item, steel constructed throughout and with adjustable ball bearing wheels. The instantly operated brake is the principal feature. The same company is putting out a new item for the very tiny youngsters, also, which is similar to the already well-known "Kiddie Kar" except that its front part is a horse's head, finished in dapple gray, which gives it its name, "The Dapple Gray Car." It has other distinctive features

The "Dapple Gray Car"

and is equipped with oversize tires and painted bright red, which contrasts pleasantly with the dapple gray of the head.—Junior Wheel Goods Co., 639 South Clarence street, Los Angeles, California.

"Delicia Perfolastic" Girdle

A new rubber corset or girdle is made of Pará rubber with tiny perforations in the rubber to permit the skin to breathe and provide for escape of moisture, the evaporation of which is aided by an overgirdle of washable silk, held by simple snap fastenings so that it is quickly detached for laundering. Soft flexible boning is also provided, as well as silk garters and silk laces. It is front-laced and front hooked also, and comes in a delicate shade of pink brocade, making an extremely dainty garment designed to mold the figure without discomfort and to be used just as an ordinary corset, not as a special reducing means.—Perfolastic, Inc., 225 West 57th street, New York, N. Y.

Rubber Boot with Leather Sole

We have had leather shoes with rubber soles of various kinds, but now appears the rubber boot with leather sole, which is sewed to the welt by a patented process and is resolable and may be hobnailed. A leather inner sole is provided to prevent burning feet and an arch support is fitted in the shank.—The Rubberhide Co., Randolph, Massachusetts.

Keaton Non-Skid Balloon Tire

Although the Keaton non-skid balloon tire has been on the market for over a year, improvements have just been made to it which bring it again to the front as a practically new product. The principal feature of the improvements increases the tread thickness 1/16th inch at the center and ¼ inch at the edges of the tread, thus forming a broad flattened tread which is said to double the mileage of the tire. A scoop-shaped wall is formed by 55-degrees angle side grooves and connecting cross-groove. This wall with square ends extends across the entire width of the tread, forming an exceptionally strong grip, the straight square edges at right angle to the road surface holding the car in a true course and checking any tendency to side slip.—Keaton Tire & Rubber Co., 636 Van Ness avenue, San Francisco, California.

Keaton Balloon Cord

Indestructible Hard Rubber Toilet Seat

The "Evernu" hard rubber toilet seat, a cross-section of which is pictured, has an interior wall or core made of a special rubber compound to the entire outside surface of which is vulcanized a layer of hard rubber. The core compound and hard rubber covering are molded together when in a plastic condition and then vulcanized together at high temperature under 115 pounds hydraulic pressure, thus eliminating all joints and making it impossible for the outside covering to chip off or become separated from the core even under the most severe tests. The "Evernu" seats are provided in ebony or mahogany color and are guaranteed not to split, break, crack, or craze. The manufacturers claim that they are practically indestructible and will retain their original gloss and new appearance indefinitely. The seat arms and lid arms are fastened into the back edges by means of heavy threaded lugs 1⅞ inches long and that portion of the seat and cover where the hinges are attached is made solid.—Neversplit Seat Co., Evansville, Indiana.

Cross-Section of "Evernu" Toilet Seat

Fly Rod Froggie with Rubber Legs

The fly rod angler is assured by the manufacturer of the fly rod froggie illustrated that it will get the fish and not the weeds. It looks, floats and actually kicks like a frog. The hook is placed back of and "below the body" and flexible rubber legs protect its point. By a slight twist of the rod these legs are made to kick out just like a frog.—Creek Chub Bait Co., 351 South Randolph street, Garrett, Indiana.

Weedless Floating Lure

"Airubber" Process Products

The "Ridesy" tractor cushion is intended to bring the same sense of comfort to the driver of a tractor, harvester, rake, cultivator, etc., as is enjoyed in pleasure cars. It is of heavy rubberized fabric, shaped to fit the back, and cushioned with air. When deflated it takes up little room, and may be inflated again quickly to any degree of flexibility. The same idea of tubular air cushions is employed in a motorcycle seat, automobile and chair seats, swimming devices, air mattresses, pillows, etc. The torpedo float illustrated is an exceptionally simple arrangement of inflatable buoys which strap around the body without in anyway interfering with arm action. Tough durable fabric is employed rubberized by the special process, which the manufacturers say obviates loss of air and bouyancy. It weighs only six to seven ounces and will hold up a full grown man.

"Ridesy" Tractor Cushion

The water bottle is an example of the Airubber process of combining fine quality rubber with corduroy and other fabrics. In this case it produces a bottle that will not need to be wrapped with a towel to keep it from being uncomfortably hot or clammily cold. A special feature is the flexible top, which may be turned down over the hand when the bottle is being filled. The corduroy may be green, blue, beaver, chestnut, or in combinations of colors.—The Airubber Corporation, 500-510 North Dearborn street, Chicago, Illinois.

Torpedo Float

Solid Comfort Water Bottle

THE BRIST MANUFACTURING CO., TOPEKA, KANSAS, IS MARKETING 44-inch and 27-inch Hackerry bows, painted red with yellow handholds, and rubber tipped arrows, sold two to a bow or in sets of a dozen.

Freas Hydrometer Syringe

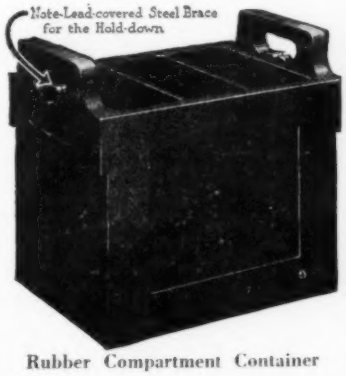
The rubber parts of the hydrometer syringe illustrated comprise the red rubber acid-resisting bulb and the soft rubber tip regularly furnished with the pipette, though hard rubber tips will be furnished at the same price if specified. The float is guaranteed accurate within one half of the smallest sub-division on the scale, which has a range of 1.100 to 1.300 specific gravity. Generally the scale has two rows of graduations, on opposite sides of the stem, but if desired a scale is furnished having one row of graduations, horizontal to the scale in black on one side and indications of "Empty," "Half" and "Full" in red on the other side. Also provision is made for inserting the customer's name on circular label inside the float on orders of 100 or more, without extra cost.—Francis L. Freas Glass Works, Conshohocken, Pennsylvania.

Freas Hydrometer

Hard Rubber Cigarette Holder and Ejector

The Superior Hard Rubber Co., Butler, New Jersey, is marketing a very attractive hard rubber cigarette holder and ejector in highly polished black or brown and in a special patented claw design. The ejector device not only provides for emptying the holder but a turn of the stem fastens it in position for easy cleaning.

Rub-Tex Battery Box



Rubber Compartment Container

One of the special features of the Rub-Tex battery box illustrated is the solid rubber handles built over heavy steel inserts, which are practically indestructible. The Rub-Tex material, the manufacturers say, has high tensile strength and superior insulating qualities and will not get acid eaten, water soaked, or rot.—Rub-Tex Products, Inc., Indianapolis, Indiana.

THE GOODYEAR TIRE & RUBBER CO. OF CANADA, LTD., NEW Toronto, have added to their already extensive line of "35" Repair Materials a tube repair gum. To prevent errors in shipment and to make it easy for dealers to identify Goodyear 30 by 3½ heavy Tourist All-Weather Tread cord tires without destroying the paper wrapper, they are now sealing the paper wrapper with a tape bearing the inscription: "Goodyear Heavy Tourist."

AN ATTRACTIVE ATOMIZER NOW BEING MARKETED BY DEALERS in notions and novelties is in the form of a Buddha made of rubber, inside the body of which is the bottle of perfume and inside the head a rubber bulb. A long rubber tube on the outside extends from the base of the figure to the mouth and when the bulb is pressed and the tube is withdrawn from the mouth of the figure the stream of atomized perfume may be easily directed and applied without lifting the Buddha.

News of the American Rubber Trade

Rubber Industry Outlook

COMMENT of rubber manufacturers comparing the current demand for rubber goods with that of the same period last year confirms the fact that in the leading divisions of the industry the volume of orders in January was of record proportions for the first month of the year and this condition was fully sustained in February. Prices are closely competitive and in general too low on most standard lines, allowing only a narrow margin of profit.

Automobile manufacturers, reassured by the evidences of increasing demand from all sections of the country, have enlarged their schedules of production. It is also anticipated that there will be less of seasonal variability of output due to the popularity of closed cars for all the year use. The prosperous state of the automobile industry is the important factor influencing the output of tires.

The large tire companies are operating at capacity as for some months past. The increasing popularity of the balloon tire is taxing the capacity of the available equipment for their production. The large tire manufacturers view the situation with satisfaction and foresee a record year for their business. The price situation is believed to be stabilized, with no likelihood of change now in sight. In some quarters it is thought that tire manufacturers will carry a larger stock of goods than last year.

The situation of the small tire manufacturer seems to be working toward his limitation to eight months of production and four months of winter inactivity.

The mechanical rubber goods division experienced a larger volume of business in January than is usual in that month. This rate was steadily maintained in February, with the outlook favorable for indefinite continuance of this pace.

Rubber footwear trade has been favored by an uncommonly strong winter demand for goods. The plants, in consequence, have begun replacement of stocks on full tickets. This activity will probably be maintained till summer vacations.

Akron Rubber Stock Quotations

Quotations of February 20, supplied by Otis & Co., Cleveland, Ohio.

	Last Sale	Bid	Asked
Firestone com.	120	..	122
Firestone 1st pfd.	98½	98	98¼
Firestone 2nd pfd.	98	98	98¼
General com.	240	235	245
General pfd.	101	..	..
Goodrich com.	38½	..	..
Goodrich pfd.	98	..	..
Goodyear com. V. T. C.	31¼	32	32½
Goodyear pfd. V. T. C.	92½	..	..
Goodyear pr. pfd. V. T. C.	106½	..	..
Miller com.	121	..	122
Miller pfd.	103	103	..
Star com.	8	..	..
Star pfd.	30	..	..
*Swinehart com.	10	..	..
Victor com.	1½	⅝	1
Victor pfd.	..	..	..

*Unlisted securities.

New York Stock Exchange Quotations

February 20, 1925.

	High	Low	Last
Ajax Rubber, com.	11⅜	11⅜	11⅜
Fisk Rubber, com.	12⅜	12⅜	12⅜
Fisk Rubber, 1st pfd (1)	83½	83	83½
Goodrich, B. F., Co., com.	46¼	45	46¼
Goodyear Tire & Rubber, pfd.	98½	97	98
Goodyear Tire & Rubber, pr. pfd. (8)	106⅞	106⅞	106⅞
Kelly-Springfield Tire, com.	16	16	16
Keystone Tire & Rubber, com.	2⅜	2⅜	2⅜
Lee Rubber & Tire, com.	12⅜	11⅝	12⅜
United States Rubber, com.	41⅝	40⅞	41⅝
United States Rubber, 1st pfd. (8)	95¼	95	95¼

New Incorporations

Artosilk Garment Co., The, January 2 (Massachusetts), $25,000. George A. Morin, president, 12 Gilbert street, Waltham; H. Clinton Kline, treasurer, 75 Fayerweather street, Cambridge, and Harold N. Cooney, clerk, Hancock street, Dorchester, all of Massachusetts. Principal office, Springfield, Massachusetts. To manufacture and deal in rubber, cotton, wool, silk, flax and all fibrous materials.

Bay Shore Rubber Tire Works, January 27 (New York), $20,000. Incorporators: S. A. Pode, 145 Barrett street; Samuel Geilar and Ruth Gellar, both of 231 Sutter avenue, all of Brooklyn, N. Y. Principal office, Queens, New York. To carry on an auto accessory business.

Biltmore Tire Co., January 17 (Rhode Island), $10,000. Incorporators: Sam H. Orenstein, 106 Davis street, Joseph Engle and Henry W. Wilkinson, both of 1 Fountain street, and all of Providence, Rhode Island. Principal office, 1-9 Fountain street, Providence, Rhode Island. Distributers and dealers in tires and tubes.

Blow Proof Tire Co., Inc., January 15 (Delaware), $100,000, par value $10.00. Incorporators: F. R. Hansel, Philadelphia, Pennsylvania; E. M. McFarland, Camden, New Jersey, and J. Vernon Pimm, Philadelphia, Pennsylvania. Principal office with the Corporation Guarantee & Trust Co., 927 Market street, Wilmington, Delaware. To manufacture all kinds of rubber goods.

Chelsea Tire Corp., February 5 (New York), $50,000. Incorporators: R. E. Doyle, 123 West 64th street; R. C. Brown and E. L. Williams, both of 43 Exchange Place, and all of New York City. Principal office, Manhattan. To carry on a tire business.

City Hall Tire Shop, Inc., January 28 (New York), $15,000. Incorporators: F. S. Pillsbury and Lillian Pillsbury, both of 40 Chestnut street, and A. C. Nelson, 209 Bowen street, all of Jamestown, New York. Principal office, Jamestown, New York. To deal in tires.

Crude Rubber & Foreign Produce Corp., February 13 (New York), 2,500 shares par value $100.00 each and 10,000 shares no par value. Incorporators: J. B. Baer, V. E. Gertz and N. F. Joyce, all of 2 Rector street, New York City. Principal office, Manhattan. To deal in crude rubber and rubber products.

Ford Rubber Co., January 23 (Delaware), 1,000 shares without nominal or par value. Incorporators: Charles B. Bishop, E. H. Feustel and A. S. Bishop, all of Wilmington, Delaware. Principal office, Wilmington, Delaware. To manufacture and deal in tires for automobiles, motor trucks, motorcycles, bicycles, etc.

Goodfriend Auto Supply & Tire Co., Inc., February 16 (New York), $10,000. Incorporators: H. Goodfriend, 535 West 162nd street; E. Goodfriend, 601 West 188th street, and M. H. Goodfriend, 601 West 188th street, all of New York City. Principal office, Manhattan. To deal in tires and accessories.

National Tire & Rubber Co., January 26 (Pennsylvania), $10,000. Incorporators and directors are Henry R. Finger, J. B. Carr and H. F. Carr, all of Wilkes-Barre, Pennsylvania. Principal office, 89 North Main street, Wilkes-Barre, Pennsylvania. To manufacture, buy and sell rubber goods and other merchandise.

Never-Rip Garter Co., Inc., December 27 (New Jersey), $50,000 preferred stock and $100,000 common stock. Incorporators: D. E. De Mont, 143 Palisade Road, Elizabeth, New Jersey; A. M. Malouf, 77 Washington street, New York City; Edward J. Leon, 2 Rector street, New York City; Ameen Malouf, 705 Monroe avenue, Asbury Park, New Jersey, and George Ellis, 1042 St. Nicholas avenue, New York City. Principal office, 705 Monroe avenue, Asbury Park, N. J. To manufacture, buy, sell, import, export and deal in garters, dry goods, and various other materials entering into the manufacture of such goods, etc.

Phelps Tire & Rubber Co., January 2 (New Jersey), $250,000. Harry E. Phelps, president, George Findiesen, secretary and treasurer, and Elizabeth Phelps, director. Principal office, 142 Monroe street, Garfield, New Jersey. To manufacture tires, inner tubes and all kinds of rubber goods.

Safety Tube Co., Inc., January 27 (New York), $50,000 par value $10.00. Incorporators: I. Trautman, 1721 56th street; E. E. Bernard, 658 10th street; and O. I. Mosser, 8 Garden Place, all of Brooklyn, New York. Principal office, Brooklyn, New York. To manufacture tires.

James M. Sebring Corp., The, January 14 (Delaware), 20,000 shares without nominal or par value. Incorporators: M. L. Rogers, L. A. Irwin and Wm. G. Singer, all of Wilmington, Delaware. Principal office, with the Delaware Registration Trust Co., 100 West 10th street, Wilmington, Delaware. To manufacture rims for automobile and motor vehicles of all kinds.

Skilton-Hide Co., The, February 6 (Massachusetts), $100,000. Raymond N. Skilton, 15 Linnaean St., president and treasurer, and Milton S. Stearns, vice-president, both of Cambridge, and Patrick F. Crowley, 16 Newhall street, Lynn, all of Massachusetts. Principal office, Boston, Massachusetts. To buy, sell and deal in rubber, hides, skins, and to manufacture any or all kinds of leather and leather products.

Williams Tire & Rubber Co., February 5 (New York), $75,000. Julian W. Williams, president, and Emma O. Williams, vice-president, both of 28 Oakwood avenue; Arthur G. Grigg, secretary, 122 Oakwood avenue, and Julian W. Williams, secretary, 28 Oakwood avenue, all of Troy, N. Y. Principal office, 48 Fourth street, Troy, New York. To sell tires and accessories.

Zimmerman Rubber Co., January 21 (Delaware), $150,000. Incorporators: E. C. Peterson, E. W. Ewell and C. R. Zimmerman; directors, P. C. Bourbeau, S. W. Crane and E. R. Throsby. To sell at wholesale and retail automobile tires, tubes, mechanical rubber goods and rubber goods of all descriptions.

The Rubber Trade in the East and South

Full production in the major lines of rubber manufacturing with which the year began continues unabated. The volume of business for January attained record proportions for that month. The settled popularity of closed cars is the chief adverse influence, reacting as it does by restricting the demand for automobile topping.

Increase in production of balloon tires is making rapid progress although not seriously reducing the number of high pressure tires on schedule.

American tire manufacturers seem to be coping successfully with foreign competition, indicated by gains in their export trade over a year ago.

Mechanical rubber goods plants are operating steadily on all the standard lines, such as hose of all kinds, belting, packing and molded goods. Orders continue in good volume, and absence of any indication to the contrary is very encouraging. Complaint is still general on the low prices for goods, especially in the standard lines.

Heels are being turned out in large and steady volume at close prices. Rubber flooring is rapidly being overdone, as indicated by competitive price cutting. Insulated wire makers are operating very actively in their various standard grades and specialties. Rubber shoe plants are operating on full tickets with emphasis on tennis and sport shoes for summer and vacation wear.

Eastern and Southern Notes

Ralph Starr Butler, who recently resigned as advertising manager of the United States Rubber Co., 1790 Broadway, New York, N. Y., has joined the Barrett Co., 40 Rector street, New York, N. Y., in a special capacity. W. F. Earls, formerly assistant advertising manager, is now in charge of advertising for the United States Rubber Co. Mr. Butler has also resigned as vice-president of the Association of National Advertisers. Carl J. Schumann, secretary of the Hilo Varnish Corporation, succeeds Mr. Butler in the advertising organization.

On February 1, 1925, the Kase-Quinby Rubber Co. opened its offices at 935-939 Broadway, New York, N. Y. V. Dietz, E. C. Paton and H. W. Quinby, all formerly associated with the I. B. Kleinert Rubber Co., are now connected with the new organization which for a time was carrying on business as the Polkase Manufacturing Co.

The Nopinseal Rubber Manufacturing Co., specializing in rubber aprons, bibs, infants' rubber goods, and sanitary and bathing accessories, has moved to larger quarters at 19-23 West 18th street, and 22-28 West 19th street, New York, N. Y.

On February 1 the New York office of the Putnam-Hooker Co., cotton goods commission merchant, was moved from 87-89 Leonard street to 93 Worth street.

At the recent annual meeting of the International Acceptance Bank, Inc., 52 Cedar street, New York, N. Y., the senior officers were re-elected and George Stuart Patterson was appointed a director. Other appointments and changes are as follows: John E. Shea, comptroller; C. B. Hall, assistant vice-president; W. T. Kelly, assistant vice-president; M. W. Williams, auditor; E. A. Carter, assistant secretary; R. W. Proctor and W. T. Sheehan, assistant treasurers. In his address to the stockholders, Paul M. Warburg, chairman of the board, announced that the calendar year 1924 represented the most successful period in the bank's existence.

Because of ill health J. N. Heim has resigned his duties with Reichard-Coulston, Inc., 95 Madison avenue, New York, N. Y., importer and manufacturer of dry colors.

The New York branch of the Henderson Tire & Rubber Co., Inc., Columbus, Ohio, is now at 234 W. 55th street.

David Burke, who since the organization of the Seiberling Rubber Co., Akron, Ohio, has been office manager of the company's New York City branch, has been recently appointed manager of that branch.

F. V. Glynn has been appointed assistant secretary of the United States Rubber Co., 1790 Broadway, New York, N. Y. Mr. Glynn will also continue to act as secretary to Charles B. Seger.

Crude Rubber & Foreign Produce Corporation, with offices in the Fisk Building, 250 West 57th street, New York, N. Y., has recently been incorporated for the purpose of dealing in crude rubber and other far eastern products. F. R. Henderson, who is president and organizer of the new concern, has been prominent in the crude rubber trade for many years.

Roy L. DeBrauwere, formerly assistant sales manager of A. Schrader's Son, Inc., Brooklyn, New York, and for ten years connected with that organization, has been elected sales manager. Mr. DeBrauwere succeeds John Hoerger, who has been transferred to Los Angeles, California, where, about June 1, he will open up a new Schrader branch. Mr. Hoerger believes that the new location offers great opportunities not only for business but also for improving his health, which during the past year has not been entirely satisfactory.

John Hoerger Roy L. DeBrauwere

A. G. Underwood, formerly associated with the Goodrich organization, is now, as accessories sales manager, connected with A. Schrader's Son, Inc., Brooklyn, New York.

The following officers of the Hudson Tire & Rubber Co., Yonkers, New York, were elected at a recent meeting: H. B. Seymour, president and general manager; Edward P. Walsh, vice-president in charge of sales, and also treasurer; R. H. Crumlich, secretary and factory manager. The offices of the organization have been removed to the factory, Nepperhan and Odell avenues, Yonkers.

Following a steady increase in business, the Tucker Rubber Corporation, 32-36 Spencer street, Buffalo, New York, has considered it advisable to increase its capital, the preferred A stock from $500,000 to $1,000,000, and the common stock from 50,000 no par shares to 75,000 no par shares. A. S. Cullen is treasurer of the company.

A. C. Galbraith is associated with the Dunlop Tire & Rubber Co., Buffalo, New York, his territory covering the southern counties of the state.

On December 31, 1924, the Utica Spinning Co., Inc., was dissolved, the Dunlop Tire & Rubber Corporation, Buffalo, New York, taking over all the assets and liabilities of the organization. The Utica concern will be operated under the same management as

heretofore and will be known as the Dunlop Tire & Rubber Corporation of America, Utica Spinning Mills.

The Omo Manufacturing Co., Inc., Middletown, Connecticut, specializing in dress shields, has secured certificates of authority permitting the company to do business in the states of New York, Massachusetts, and Illinois. Frank E. Ferree is secretary of the company.

Dr. D. Spence, associated with the Norwalk Tire & Rubber Co. Inc., Norwalk, Connecticut, since its inception, has resigned as general manager. It is understood that his duties have been taken over by W. B. Miller, president of the company.

Power equipment at the Goodyear Cotton Mills, Inc., Goodyear, Connecticut, was changed from steam to electricity on February 1, 1925. H. M. Coulter is assistant treasurer of the organization.

William C. Hoover, formerly associated with The B. F. Goodrich Co., Akron, Ohio, is now factory production manager for the Norwalk Tire & Rubber Co., Inc., Norwalk, Connecticut.

Samuel D. Barr has succeeded David T. Newman as southern district manager of the Yarnall-Waring Co., Chestnut Hill, Philadelphia, Pennsylvania, Mr. Newman having been placed in charge of the company's western New York territory. The southern headquarters will continue at 1019 Atlanta Trust Co. Building, Atlanta, Georgia.

The Fawcus Machine Co., Pittsburgh, Pennsylvania, manufacturer of herringbone gears and various lines of mill equipment, announces that Presley A. Hamilton has been appointed the company's district representative, with headquarters at 149 Broadway, New York, N. Y.

The Frank G. Schenuit Rubber Co., 1200-1202 Mt. Royal avenue, Baltimore, Maryland, manufacturer of "Double Grip" tires and tubes, has, instead of enlarging its present factory, purchased a new plant which is giving the company much greater floor space and facilities for a growing business.

The Oak Tire & Rubber Co. has moved its offices from 125 West Mt. Royal avenue to 606 Phoenix Building, East Redwood street, Baltimore, Maryland.

The Miller Rubber Co., Akron, Ohio, has been operating a fleet of test cars in the vicinity of Orlando, Florida. It has been found that for the soft, sandy roads of that section the low pressure balloon tire is more effective than smaller traction tires.

Tire fabric is now being manufactured at the Worth Mills, Fort Worth, Texas. The plant is running at capacity, and a night schedule is soon to be instituted. L. E. Bridgman is treasurer of the organization.

A. H. Sommers, for about ten years connected with the United States Rubber Co., is now sales representative for the mechanical goods division of the Empire Tire & Rubber Corporation, Trenton, New Jersey. Mr. Sommers will make his headquarters in Memphis, Tennessee, his territory covering the states of Tennessee, Alabama, North and South Carolina, Georgia, Florida, Mississippi and Arkansas.

The Rubber Trade in New Jersey

New Jersey rubber manufacturers are now looking for a good season after the severe winter months and expect an increase in the output not only of tires but of all kinds of mechanical goods. Manufacturers report an increase in orders for radio and other hard rubber goods. The plants continue busy in turning out millions of feet of garden hose for the spring trade, which will be kept in warehouses until salesmen begin to send in their orders from retail dealers. Belting and packing production continues good. There has also been a noticeable increase in balloon tire orders and it is believed that there will be a better demand for standard high pressure tires when the motoring season opens early this spring.

New Jersey Rubber Manufacturers Association

The monthly meeting and luncheon of the Rubber Manufacturers Association of New Jersey was held on February 11 at the Stacy-Trent hotel, Trenton, New Jersey. Guests of honor included A. L. Viles, general manager of the Rubber Association of America; G. H. Mayo, vice-president of the United States Rubber Co.; and Walter Gussenhoven, sales manager of the mechanical department of the same company. The three guests gave interesting talks on the present rubber situation and all expressed confidence in the future. Charles E. Stokes, president of the asssociation, presided over the meeting that in attendance and interest was most successful.

Combination Rubber Co. Increases Operations

A new four-story building, 80 by 300 feet, has been completed for The Combination Rubber Manufacturing Co., Trenton, New Jersey, and modern machinery for the production of tires, tubes, and a general line of mechanical rubber goods has been installed. The company's Bloomfield factory has been closed and the Trenton plant is running on a schedule of twenty-four hours a day.

Officers of the organization include: Horace T. Cook, president; Henry N. Young, vice-president; Fred L. Conover, treasurer; Frank W. Servis, secretary; and Arthur R. Colvin, factory manager.

New Jersey Notes

Trenton rubber manufacturers responded liberally to the drives for the Hospital for Crippled Children, and the St. Francis Hospital, both in Trenton, New Jersey. General C. Edward Murray, president of the Crescent Insulated Wire & Cable Co., headed the list with $5,000, while Colonel Arthur Foran, of the Dural Rubber Co. gave $1,000. Through George R. Cook, head of the Hamilton and Acme companies, each donated $300. A like sum was given by J. Oliver Stokes, president of the Thermoid Rubber Co. Clifford H. Oakley, head of the Essex Rubber Co., contributed $50. General Murray headed one of the divisions collecting money for charity. Rubber company employes contributed about $4,000.

B. M. Cullen has become associated with the Empire Tire & Rubber Corporation, Trenton, New Jersey, as special factory representative, devoting his efforts to sales and installation problems. R. M. Stuart, mechanical sales manager, left Trenton on February 15 for an extended trip to the Pacific Coast, visiting en route the company's branches.

The Pocono Rubber Cloth Co., Trenton, New Jersey, is meeting with success with its rubber golf bags known as "Par Bags." The department is an entirely new one and is conducted in another building about a mile from the present plant. During the winter the company began the production of a new topping material for closed cars. The company's business during 1924 was 20 per cent greater than during 1923, and more factory space will be required in the near future.

Charles E. Stokes, receiver of the Bergougnan Rubber Corporation, Trenton, New Jersey, has obtained an order from Judge William N. Runyon in the United States District Court requiring the creditors and stockholders of the company to show cause why assets of the concern should not be sold at public auction.

The Trenton Tire & Rubber Co., Trenton, New Jersey, has been selected as the Trenton agency for the products of the Murray Rubber Co. and the Empire Tire & Rubber Corporation.

The Globe Rubber Tire Manufacturing Co., Trenton, New Jersey, announces an increase in production of both tires and tubes, with some good orders for the spring trade.

The Ajax Rubber Co., Trenton, New Jersey, continues to run normally and expects production to increase in another month. The demand for the new "Gaspac" tubes is reported to be increasing.

The Fisk Flap Rubber Tube Co., Camden, New Jersey, plans to build at Trenton. The plant will be one story, 150 by 100 feet, and will cost about $25,000. The company has offices in Camden and is now having its product made at a Trenton plant.

The B. & B. Rubber Co. will shortly be incorporated at Trenton, New Jersey, for the purpose of manufacturing bouncing rubber toy babies. The product is now being made by the Pierce-Roberts Rubber Co. for the concern, which, it is reported, will later erect its own plant.

The Luzerne Rubber Co., Trenton, New Jersey, manufacturer of hard rubber goods exclusively, reports improvement in business and a better demand for all lines of goods.

Vice-Chancellor John H. Backes has approved the sale of the Howe Rubber Corporation, New Brunswick, New Jersey, for the sum of $197,500. The purchasers are Messrs. Marcus and Laurie, of New Brunswick, who are the owners of a rubber reclaiming plant at Millstone, New Jersey. The purchase of the Howe plant and equipment is for the purpose of expanding that business. Israel Laurie, Irving Laurie, and Joseph D. Marcus, the new owners of the Howe company, are also proprietors of the New Brunswick Iron & Metal Co.

The Phelps Tire & Rubber Co., Garfield, New Jersey, manufactures tires, inner tubes, and all kinds of rubber goods. The company is now turning out 400 tires a day and plans to make 700 or 800 tires a day within the next thirty days. Harry E. Phelps is president and George Findiesen is secretary and treasurer.

Robert Chris, assistant secretary and treasurer of the Dural Rubber Corporation, Flemington, New Jersey, will sail on March 14 for England.

The plant of the Hydro United Tire Co., Pottstown, Pennsylvania, was recently put up at auction, the sale being authorized by the United States District Court as a result of equity proceedings of the William N. Albee Co. The highest bid was $160,000, the bidder being F. H. Smith, a consulting engineer, of Plainfield, New Jersey. It will be necessary for the Federal Court to confirm the sale.

John Tenney, Plainfield, New Jersey, has filed a voluntary petition in bankruptcy in the United States District Court. The liabilities are scheduled at $53,767, and the assets as $28.11. Mr. Tenney was formerly president of the defunct Howe Rubber Corporation, New Brunswick, New Jersey, in which he owned 4,000 shares of stock.

Due to severe winter weather the Lambertville Rubber Co., Lambertville, New Jersey, has been very busy. Dealers did not stock heavily, supplies were soon exhausted and the company was compelled to operate to capacity. The warehouse was cleaned out and the company expects a busy summer ticket on next year's goods.

The Fisk Flap Rubber Tube Co. held its annual meeting at Camden, New Jersey, January 20, when Paul H. Weldel, Trenton, New Jersey, was elected president; H. E. Danker, Washington, D. C., vice-president; E. Kelsey Moore, Collingswood, New Jersey, secretary, and C. Francis Fisk, Trenton, New Jersey, treasurer.

Rhode Island Notes

Additional claims aggregating $83,301.08 against the O'Bannon Corporation of West Barrington, Rhode Island, were allowed by Richard LeBaron Bowen, receiver, under a decree by Presiding Justice Willard B. Tanner on February 9. Among the claims allowed is that of the United States Rubber Reclaiming Co. for $25,618.61; E. H. Clapp Rubber Co. for $22,336.98; and the Pequanoc Rubber Co., $6,970.89.

In an opinion of the Rhode Island Supreme Court handed down by Chief Justice William H. Sweetland about the middle of the past month, Russell G. and Roswell C. Colt are entitled to receive payments of $3,500 a year each, from the estate of their father the late Col. Samuel P. Colt, which has been withheld from them since 1922. This decision reverses a decree of the Superior Court which ordered that the payments from a trust fund be paid over to Alfred G. Chaffee as guardian of Mrs. Elizabeth Colt, their mother.

The Employes' Mutual Benefit Association of the Davol Rubber Co., Providence, Rhode Island, at its recent annual meeting returned to office E. L. Hana as president; Paul Raich, vice-president; Alfred E. Goff as secretary and Charles B. Bamford, treasurer. The fourth annual musical show and dance of the association was held Monday and Tuesday evenings, February 16 and 17, at Elks' Auditorium and a substantial sum was added to the treasury. During the rehearsals for the entertainment members of the association, following their usual custom, visited several of the hospitals and other institutions and furnished an evening's program for the inmates.

All departments are operating on a day and night schedule at the mill of the Carolina Co., Carolina, Rhode Island, which specializes in high-grade automobile linings. The company now has 28 looms operating on the night shift and more than 200 employes, with orders in its books for several months' full time.

Joseph Engle has formed a partnership with Samuel H. Orenstein and opened the Biltmore Tire Co. at 1 to 9 Fountain street, Providence. The company is factory distributer for the Ajax tires and is one of the largest tire stores in the city.

The Rubber Trade in Massachusetts

The optimism of Massachusetts rubber goods manufacturers at the beginning of the current year has been amply justified by the volume of business enjoyed during the two months which have elapsed. With few exceptions the rubber plants in this vicinity in all branches of the trade are operating at normal if not full capacity, and orders booked ahead point to a continuance of this condition for the first half of the year at least.

The rubber footwear trade has had a better than ordinary season and plants are operating on full tickets for both winter and spring goods. Rubber heel, cement and shoe findings manufacturers are busy, but highly competitive profit margins, especially in heels, are too narrow for optimism. Tire production is large in anticipation of an increased demand amounting to 10 to 15 per cent, with the proportion of balloon tires steadily advancing. The larger proportion of closed cars being manufactured has affected the automobile topping trade adversely.

Mechanical rubber goods plants are active on standard goods, seasonal spring lines, such as garden hose and jar rings, and railway equipment orders. Druggists' sundries are still in large demand, and weatherproof clothing makers are busy in anticipation of spring business. Insulated wire and flooring production are large and increasing in response to greater building activities.

Many Favor Boston Rubber Exposition

Although the proposal to hold a World's Rubber and Tropical Products Exposition under the personal direction of Chester I. Campbell in Mechanics Building, Boston, Massachusetts, October 10 to 17 inclusive, 1925, has not yet obtained the indorsement or support of the Rubber Association of America, many rubber and allied trade firms both in New England and the New York district favor the project as a general trade stimulant and to commemorate the one hundredth anniversary of the founding of the American rubber industry in Boston. They feel that the time is propitious as it marks the twenty-fifth anniversary of the Rubber Association of America, which was likewise founded in Boston as the New England Rubber Club. Other reasons for holding such an exposition in Boston are its importance as a rubber manufacturing center and the fact that Massachusetts

claims a greater consumption of rubber goods per capita than any other state, probably due to the concentration of textile, leather, shoe and many other industries using mechanical and other rubber goods.

A petition setting forth the principal aims and advantages of the proposed exposition, which has the moral support of the Boston Chamber of Commerce, and asking favorable action by the Rubber Association of America had the following signatures on February 13:

Firm (Corporation)	Individual (Officer)
Alfred Hale Rubber Co.	D. A. Cutler, Pres.
Appleton Rubber Co.	George McCrea, Fac'y. Mgr.
T. C. Ashley & Co.	T. A. Ashley, Pres.
Boston Belting Co.	R. A. Mainwaring, Vice-Pres.
Boston Insulated Wire & Cable Co.	H. B. Burley, Treas.
Bourn Rubber Co.	A. O. Bourn, Jr. (& Sr.)
Godfrey L. Cabot, Inc.	Thos. D. Cabot, Treas.
Cambridge Rubber Co.	Warren MacPherson, Treas.
Continental Rubber Co. of N. Y.	G. H. Carnahan, Pres.
Converse Rubber Shoe Co.	Hugh Bullock, Treas.
Franklin Rubber Co.	A. C. Merrill, Pres.
Gleasonite Products Co.	F. J. Gleason, Pres.
J. C. Haartz Co.	L. F. Jackson, Treas.
Hazen-Brown Co.	Max Brown, Pres.
E. D. Hewins, Inc.	E. D. Hewins, Treas.
Kleistone Rubber Co., Inc.	J. Everett Stone, Pres.
The Lubron Co.	O. B. Wakelee, Treas.
Mass. Auto Dealer & Garage Assn.	Day Baker, Pres.
Meade Rubber Co.	James Meade, Pres.
Moore-Merritt Rubber Co.	T. L. Moore, Pres.
Murray Rubber Co.	C. Edw. Murray, Jr., Pres.
New England Tire & Rubber Co.	S. R. Huntley
Norwalk Tire & Rubber Co.	Wm. B. Miller, Pres.
Plymouth Rubber Co.	I. M. Hamilburg, Gen. Mgr.
Quabaug Rubber Co.	H. T. Mason, Pres.
Safety Insulated Wire & Cable Co.	LeRoy Clark, Pres.
Stamford Rubber Supply Co.	W. F. Gillespie, Gen. Mgr.
Steadfast Fabric & Rubber Co.	A. Sydeman, Treas.
Stedman Products Co.	M. A. Turner, Vice-Pres.
Taunton Rubber Co.	Mr. Gifford
Terkelsen Machine Co.	E. A. Terkelsen, Treas.
Tyer Rubber Co.	Myron H. Clark, Pres.
United Oil & Natural Gas Products Co.	A. K. White
United & Globe Rubber, Inc.	Peter Vredenburgh, Pres.
Wishnick-Tumpeer Chemical Co.	R. I. Wishnick, Pres.

This is the first American managed world's rubber exposition ever attempted in the United States actively supported by rubber manufacturers. Among its objects are: to interest the buyers and public in new and little known uses for rubber; to stimulate the use of more rubber goods; and to bring manufacturers into closer touch with planting interests and inventors.

Less Frequent Footwear Style Changes Wanted

Rubber shoe manufacturers are welcoming the intensive campaigning for lessened frequency of footwear style changes which the leather shoe industry has begun. Intended to increase sales, it has been found that frequent style changes do not warrant the increased cost of manufacturing and merchandising the goods, and that the problems of adequate distribution are multiplied. The cost of new lasts alone is enormous, both to the leather shoe manufacturer and to the rubber shoe manufacturer who must fit them.

A new era of footwear sanity following the unbridled style carnival of the past few years began to dawn with the recent exposition of the National Shoe Retailers Association in Boston, and is pretty certain to be even more strongly featured in the annual Boston style show, which takes place during the week of July 6.

That the country's shoe production is gradually going back to a more normal basis is indicated by the official figures for 1924, showing that total output last year was 313,230,000 pairs, as compared with 351,114,000 pairs in 1923, when an obvious overproduction occurred. This represents a shrinkage in value of over $100,000,000.

Massachusetts Notes

J. D. Anderson, who in 1916 became connected with The Fisk Rubber Co., Chicopee Falls, Massachusetts, and has been serving as vice-president and factory manager of the Fisk Division at Chicopee Falls, has been appointed vice-president in charge of production at all divisions of the Fisk organization. The company operates six plants: four textile factories, at New Bedford, Massachusetts, Jewett City, Connecticut, Pawtucket and Westerly, Rhode Island; and two tire plants, one at Chicopee Falls, Mass., and the other at Cudahy, Wisconsin.

At the annual sessions of the American Management Association in New York, N. Y., recently Dr. R. S. Quinby, service manager of the Hood Rubber Co., Watertown, served as chairman of the committee on health supervision and presented an able address on this subject.

Essex Cotton Mills, Inc., organized for manufacturing carded yarns and fabrics for tires, has acquired the business formerly conducted by the American Cotton Fabrics Corporation at its mills in Passaic, New Jersey, and Newburyport, Massachusetts. These mills have been successfully operated by Taylor, Armitage & Eagles, Inc., 120 Broadway, New York, N. Y., who will continue to act as agents for the new corporation. R. P. M. Eagles is vice-president of the former concern.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, this year has 398 non-English speaking employes enrolled in thirteen factory English classes which meet two evenings a week and are taught by specially trained public school teachers. Experience indicated that these classes not only increase factory production but increase the helpful contacts which the employment department and the concern have with the employes.

According to the plans of the Firestone Tire & Rubber Co., Akron, Ohio, the recently purchased mills at Fall River, formerly known as the Sanford Cotton Mills, will in the future be operated under the name of the Firestone Cotton Mills. Under the new arrangements the Fall River plant will supply at least 50 per cent of the Firestone company's cotton fabric requirements for tires and other goods.

Products of the De Laval Steam Turbine Co., Trenton, New Jersey, and of the De Laval Separator Co., Poughkeepsie, New York, will be handled exclusively in New England by the Turbine Equipment Co. of New England, 80 Federal Street, Boston, Massachusetts. F. R. C. Boyd is president of the new company that will serve users of De Laval steam turbines, centrifugal pumps and blowers, double helical speed reducing gears, worm reduction gears, hydraulic turbines, flexible couplings, and oil purifiers.

The Rubber Trade in Ohio

While the rubber industry in Ohio has slowed up somewhat in the past few weeks from the rapid pace set at the beginning of the year, there has been no change in the general feeling of confidence among rubber executives that 1925 will be a record breaking year. The slight lull during February is regarded as only temporary, and the business is expected to soon resume its upward trend.

Spring dating orders, which were anticipated in heavy volume this month, have been backward, in some respects. This has been especially true with regard to high pressure pneumatic casings, dealers showing a reluctance to buy large stocks at this time for consumption in the spring and summer. Sales of balloon tires continued to increase, however, and indications are that 10,000,000 balloons will be manufactured this year, compared with 3,804,324 in 1924. American manufacturers will produce 55,000,000 tires in 1925, it is predicted. Sales of tires, rubber footwear and mechanical rubber goods were larger in January than ever known for that month.

Akron Rubber Company Reports for 1924

Annual reports of six rubber companies recently made public show total sales for 1924 of $276,576,217, representing an increase of $24,345,173 over 1923 business. Net earnings indicated a better percentage to gross and stock than has been evidenced in several years. An outstanding feature was the general improvement in the ratio of current assets to liabilities. A marked improvement in financial position is seen in practically every statement made this month.

Sales of $138,777,719, an increase of nearly $11,000,000 over the preceding year, were reported by the Goodyear Tire & Rubber Co. for 1924. Net earnings were $7.78 a share on common stock, against 90 cents in 1923. The B. F. Goodrich Co. reported sales of $109,000,000 compared with $107,000,000 in 1923, and net profits were $10.30 a share on common stock. Ratio of current assets to current liabilities went from 4 to 1 to 10 to 1. General Tire & Rubber Co. almost doubled 1923 earnings, and reported $37.50 earned on each share of common stock.

The "come-back" staged by some of the smaller rubber companies last year was even more remarkable. Sales by the India Tire & Rubber Co. during 1924 totaled $3,021,767.39, or an increase of more than 54 per cent over the previous year. An outstanding record was made by the Mohawk Tire & Rubber Co. The company suffered severely during the depression. Much of the success of the company has been accomplished by building up and maintaining a high type of dealer personnel throughout the country. President S. S. Miller reported that Mohawk's sales were increased 33 per cent over 1923 for a total of $3,413,731. Earnings were $343,656, compared with $47,000 in 1923. Balance available for the common stock was $10.18. The Mason Tire & Rubber Co., which suffered severely during the slump and recently went through a reorganization, is regaining its earning power, and rapidly coming to the front. Sales during 1924 were $9,211,000, compared with $7,000,000 in 1923, according to the annual report of President W. A. Cluff. January sales exceeded $800,000.

W. O. Rutherford Urges Economy

More rigid economy must be practiced by the rubber industry if it is to profit by the 10 to 15 per cent increase in business predicted for it this year, declared W. O. Rutherford, president of the Rubber Association of America, in a recent talk here before automobile and radio dealers.

"Curtailment, elimination of waste and careful management are necessary if any business is to succeed. The waste of today is the profit of tomorrow, if it is stopped. A dollar will buy more in rubber than in any other industry. Rubber goods are sold at too low a level. I trust we shall be able to sell our manufactured products at prices which will enable the rubber companies to operate on a profitable basis, so as to pay dividends on common and preferred stocks."

Prosperity Ahead for Rubber Industry

The year 1925 will represent a prosperous business period for rubber manufacturers, according to William F. Pfeiffer, general manager of The Miller Rubber Co., Akron, Ohio. The rubber industry, Mr. Pfeiffer said, is now in a sound condition, and with the increasing use of automobiles no one can measure the possibilities for the rubber business of Akron, and for the industry in general. In regard to replacement business Mr. Pfeiffer said: "Each year more automobiles are in use despite the fact that production fluctuates. In considering tire replacements we must subtract from each year's production or registration of cars the discards and consider only the growth in number of cars actually in operation. We cannot consider new cars equipped with new tires as probable sources for replacement under eighteen months, as tires run not one year but one and a half, two and sometimes two and a half years, before new tires are required. This is because tire production is becoming closer to perfection every day. . . . 1925 is bright. It is the beginning of many prosperous years in tire manufacturing and the rubber industry generally. I am 100 per cent sold on 1925."

Goodrich Plans Big Warehouse

Plans for a large warehouse addition to The B. F. Goodrich Co.'s Akron plant are being drawn. The extra storage space was made necessary by the increase in the volume of boots and shoes manufactured.

Heretofore the industry has centered in the East around New York, and in the West at Chicago, and most of the footwear made here was sent to storage houses in those cities for redistribution later. This is to be eliminated by the new Akron warehouse.

Akron Produces 85 Per Cent of World's Rubber Boots, Shoes and Heels

Statistics show that Akron rubber factories manufacture approximately 85 per cent of the world's supply of rubber boots, shoes and heels. The output in 1924 from the Akron district aggregated nearly 10,000,000 pairs of rubber boots and shoes, the Goodrich organization alone making about 30,000 pairs of footwear a day. The gross production of rubber heels in 1924 approximated 200,000,000, the leading manufacturers being the Goodrich, Goodyear, Firestone, Miller and Seiberling organizations. Plans for increasing their output this year by 25 to 50 per cent are under consideration by the majority of these companies.

Ohio Notes

The Mohawk Rubber Co., Akron, Ohio, is erecting a new building and installing additional equipment at a cost of approximately $100,000. During the past six months the plant output advanced from 800 to 1,200 tires daily, and the new constructions will enable the company to still further increase its production. S. S. Miller is president.

The Lufbery Co., Inc., Elizabeth, New Jersey, has appointed J. A. Kendall, Akron, Ohio, western representative in sales of sulphuret of antimony. The Lufbery antimonies are manufactured in France and are well known in the United States, Canada and Europe.

Fellowships in rubber chemistry at the Municipal University of Akron, Ohio, have been offered for the academic year 1925-1926 by the Goodyear Tire & Rubber Co. and the Firestone Tire & Rubber Co. The fellowships will be granted to graduates of first grade chemical courses and will pay the holder $1,000.

C. W. Seiberling, vice-president of the Seiberling Rubber Co., Akron, Ohio, has assumed the duties of W. A. M. Vaughan, who recently resigned as treasurer of the company.

Paul C. Searles, treasurer of The India Tire & Rubber Co., Akron, Ohio, who has also been appointed director of sales, has associated with him as divisional sales managers Lynn Harvey and Harry C. Corbett. With the new plant addition factory capacity is now from 1,500 to 1,800 casings a day.

David L. Brown, former advertising manager of the Goodyear export department, is now manager of the sales department of the export corporation.

J. T. Hennessy has been placed in charge of the development department maintained by The Swinehart Tire & Rubber Co., Akron, Ohio. T. F. Walsh, president of the Swinehart organization, is planning a business trip to the West Indies, his journey including visits to Cuba and Porto Rico.

W. E. McCormish, president of the Rubber Engineering Co., 636 Second National Building, Akron, Ohio, is also acting as consulting engineer for the Gregory Tire & Rubber Co., Vancouver, British Columbia.

H. E. Easterday has become associated with White-Seiberling & Co., an organization specializing in crude rubber and raw materials for the industry, and which maintains offices at 602-603 Flatiron Building, Akron, Ohio.

Russell & Farley & Co., specializing in fabrics and pigments, have opened an office in the Akron Savings and Loan Building, Akron, Ohio.

The stockholders and officers of The Mt. Vernon Rubber Co., Mt. Vernon, Ohio, have decided that the plant should be sold and the corporation dissolved. The factory is said to be ready for operation and the equipment is in excellent condition. The Mt. Vernon company, which has recently passed through bankruptcy, is the successor to the Knox Tire & Rubber Co.

J. C. Kearns, the new works manager of The Republic Rubber Co., Youngstown, Ohio, became connected with the organization in 1907 and has since held various positions of responsibility, having been acting sales manager in 1921, and production manager in 1924. Plans are being made by the Republic company for increasing production, particularly with reference to inner tubes and solid tires.

J. C. Kearns

Practically the entire plant of The Victor Rubber Co., Springfield, Ohio, will be devoted to the production of Victor-Springfield Heavy Duty Red Seal cord tires. Executives are anticipating that 1925 will prove to be the best year for business that the company has yet experienced. H. S. Berlin is president.

The operating schedule maintained by The Barr Rubber Products Co., Sandusky, Ohio, has been changed from a working day of 8 hours to one of 12 hours. The company has also opened a molded department. The dipped goods plant is running at capacity and prospects for the spring trade are most satisfactory. N. Barr is president of this organization, which specializes in the manufacture of toy balloons and various rubber goods.

The Henderson Tire & Rubber Co., Inc., Columbus, Ohio, has established five new branches in recent months, the last to be opened being in Los Angeles, in charge of A. Y. Bronaugh. The plant at Columbus is operating at normal capacity. Executives include: C. O. Henderson, president and general manager; George C. Riley, secretary; and H. W. Dillon, director of sales.

Executives of The Wilson Rubber Co., Canton, Ohio, state that the production capacity has been increased by 35 per cent with the construction of a new four-story addition. John S. Willis is president.

New machinery and equipment are being installed at the plant of The Akron Rubber Reclaiming Co., Barberton, Ohio, and production is to begin soon after the first of April. B. O. Elting is president and treasurer, and C. E. Bishop is vice-president and factory manager.

UNITED STATES EXPORTS OF COTTON CLOTH TOTALED 51,819,264 square yards, value $7,966,208, during January, compared with 43,693,406 square yards with a value of $6,707,702 for December, and 28,444,241 square yards worth $5,112,501 for January, 1924. Shipments in January, 1925, comprised the following classifications and amounts in square yards; duck, 795,989; other cotton cloth,—unbleached, 12,428,211; bleached, 9,051,067; printed 11,301,789; piece-dyed, 8,518,479; yarn-dyed, 9,723,729. Compared with exports during January, 1924, the foregoing quantity figures show an increase of 6,000,000 square yards in unbleached, 4,500,000 in bleached, 5,500,000 in printed, 2,000,000 in piece-dyed, and 4,500,000 in yarn-dyed cotton cloth.

The Rubber Trade in the Midwest

Lincoln Highway Association Elects Officers

At the recent annual meeting in Detroit, Michigan, of the board of directors of the Lincoln Highway Association, J. Newton Gunn was reelected president. For four years Mr. Gunn has held this office, having on January 1, 1921, succeeded F. A. Seiberling.

The other officers of the Association, elected by unanimous vote at the recent meeting, are: Vice-presidents, F. A. Seiberling, Roy D. Chapin, Carl G. Fisher, Henry B. Joy, A. F. Bement; secretary, Gael S. Hoag; treasurer, Emory W. Clark.

Midwest Notes

C. L. Stebbins, vice-president of the Auburn Rubber Co., Auburn, Indiana, tendered his resignation on January 24. He has been connected with the company almost since its organization, and has a wide acquaintance in the industry. Other executives of the Auburn organization include: A. L. Murray, president; C. H. Hanna, secretary; N. C. Buckley, treasurer; W. K. Schaab, assistant treasurer; C. E. Ihrie, sales and advertising; and J. E. Buckley, superintendent.

The Steinbrenner Rubber Co. has been organized to take over the plant and properties formerly maintained by the Burdick Tire & Rubber Co., Noblesville, Indiana. The property, offered on January 10 at a bankruptcy sale, was purchased by H. G. Steinbrenner, former president of the Burdick organization, and who now heads the new company. Other executives include: Melvin Pattison, vice-president; S. Homer Federman, secretary and treasurer.

The Schacht Rubber Manufacturing Co., Huntington, Indiana, was established in 1909 and specializes in mechanical rubber goods. Executives include: W. J. Schacht, president; E. M. Schacht, first vice-president; C. A. Schacht, second vice-president; M. K. Schacht, secretary; and W. F. Schacht, treasurer and manager.

R. B. Crane has been appointed vice-president and general sales manager of the Auburn Rubber Co., Auburn, Indiana, succeeding C. L. Stebbins. Mr. Crane was formerly divisional manager for the Ajax and Racine rubber companies, and later vice-president and general sales manager of the Cooper Corporation, Cincinnati, Ohio. The Auburn organization, which is headed by A. L. Murray, manufactures automobile tires and tubes, hard rubber goods, and soles and heels for boots and shoes.

R. B. Crane

The National Tire & Rubber Co., 89 North Main street, Wilkes-Barre, Pennsylvania, is distributing Dunlop solid, cushion, and pneumatic tires in a number of cities in eastern Pennsylvania.

The Century Rubber Works, 54th avenue and 18th street, Chicago, Illinois, is now installing equipment which will result in an increase in the plant production by about 60 per cent, or a total of 2,500 tires daily. William L. Burgess is manager of sales.

J. H. Wilson has been appointed district manager for the Michelin Tire Co., Milltown, New Jersey, his territory covering the state of Michigan and several counties in Ohio. Mr. Wilson will make his headquarters at one of the Michelin branches, 40-42 Milwaukee avenue, West, Detroit, Michigan.

B. B. Benner has been appointed president of the International Rubber Company of America, Anderson, Indiana, succeeding J. D. Wiggins, resigned. F. E. Potes was also elected a member of the company's board of directors, succeeding S. T. Davis, resigned.

Operations are soon to begin at the plant of the T-P Spring Tire Co., 506 Commercial street, Atchison, Kansas. The organization, which is headed by George Baudry, will manufacture a solid tire having special features.

The offices and warehouse maintained in Indianapolis, Indiana, by the Ajax Rubber Co., 218-222 West 57th street, New York, N. Y., have been removed to 206 South Pennsylvania street.

Charles R. Wetsel is now western district sales manager of the Miller Rubber Co., Akron, Ohio.

The Rubberstone Manufacturing Co., Kansas City, Missouri, is conducting the business originally established by A. J. Stephens under the name of the A. J. Stephens Rubber Co., Inc., which went into bankruptcy in January, 1922. A plant has been secured in Kansas City at 14th and Chestnut streets and tires are now being produced. Executives of the new company are: A. J. Stephens, president; N. E. Trego, secretary and treasurer; R. S. McSpadden, sales manager; and Benjamin T. Morgan, factory manager.

The Rubber Trade on the Pacific Coast

There has seemed to be a buyers' strike on the Pacific Coast. Retail dealers are apparently reluctant to stock up for spring demand and are buying from hand-to-mouth. A gradual reduction in general business is given as one cause for the easing off in orders; very stormy weather in the northwest section and inadequate rain for ranchers and others in the southwest were also mentioned as depressing factors; but the shyness about buying might also be ascribed to the impression widely prevalent among retailers that tire companies may soon cut prices. This is declared most improbable by representatives of the larger companies, while makers of moderate-priced tires on the Coast report that sales are holding up well and that they contemplate no price cutting.

The fairly heavy rainfall during the winter, being double that of a year ago in the southwest, has helped to move retail dealers' stocks of rubber footwear. Distributers for eastern shoe manufacturers are encouraged, and representatives of the shoe makers expect increased orders this spring. Dealers in heavy rubber conveyor belting tell of many inquiries for new equipment, and of the prospect of many large orders being released just as soon as business picks up. The demand for oil field, refinery, and delivery rubber supplies has abated somewhat during the month, but purchasing agents for oil companies expect to be in the market shortly. Rubber flooring is still in good demand, and an early revival of building operations will, it is said, disclose a scarcity of rubber floor covering. Tire repair material of the better sort continues in good demand. Several of the large cities are likely, it is said, to be in the market soon for fire hose. Retailers report a good prospect for garden hose.

Pacific Coast Notes

L. J. Shields, president of the National Lead Battery Co., St. Paul, Minnesota, states that his company plans to build a branch factory in Los Angeles which will have a daily output of from 500 to 700 radio and automobile batteries. The company operates factories in Oakland, Portland, New York, Atlanta, and Dallas.

Based on present production, Goodyear Tire & Rubber Co. is using at the rate of 6,000 tons of crude rubber yearly at its Los Angeles plant. Within the past month the factory has received through the port of Los Angeles two shipments of crude rubber from Singapore totaling over 1,500 tons.

Elmer S. Firestone, southern California branch manager of the Firestone Tire & Rubber Co., recently returned to Los Angeles from Akron, Ohio. Latterly he has been studying trade conditions in the Imperial Valley cities and Arizona.

California's registration of motor cars for the fiscal year ended January 31 was 1,319,394, or 20 per cent more than a year before. Of these 1,125,381 are passenger cars, 41,959 solid tire motor trucks, 152,054 pneumatic tire motor trucks and stages. In addition, the records show 12,325 motorcycles and 19,040 trailers.

J. B. Brady, general manager of the Pacific Coast Division, United States Rubber Co., with headquarters in San Francisco, is regarded as one of the best judges on the Coast of general trade conditions. He regards the lull in most commercial lines as only temporary. He is convinced that 1925 rubber business will considerably eclipse that of 1924.

H. C. Branch has become connected with the division maintained at San Francisco, California, by The Norwalk Tire & Rubber Co., Norwalk, Connecticut.

Joseph A. McNulty, importer of red oxides, 114 Liberty street, New York, N. Y., announces that stocks of his products will be carried in San Francisco by his representatives, Pitts & Loughlin, 311 California street, San Francisco, California.

The Industrial Belting & Supply Co., 364 Sixth street, San Francisco, California, which for more than twenty-five years has been carrying on business as a distributer of belting, hose, packing, etc., has made arrangements with the Mechanical Rubber Co. to handle its entire line in the San Francisco territory. R. E. Steele is president and manager of the first-mentioned organization.

C. H. Williams, vice-president and sales manager of the Mason Tire & Rubber Co., Kent, Ohio, and Paul B. Coats, of the Millburn Puncture Proof Tire Co., Chicago, Illinois, recently visited the Coast.

V. A. Martin, Los Angeles branch manager of The B. F. Goodrich Co., Akron, Ohio, reported good business for February, despite a quiet tone in most of the larger commercial lines. Mechanical rubber goods were in excellent demand; and, although sales of passenger car tires were not as brisk as usual, the branch went much above its quota in sales of solid tires and heavy duty stage and truck casings.

The Zinc Pigment Co., with $350,000 capital, has been organized to erect a zinc chemical plant in Anaheim, California. Zinc ores will be mined in Silverado Canyon and treated at the new plant, which will have a spur from the Southern Pacific Railway. The plant will be in charge of Ernest Harms, formerly in charge of a large smelting establishment in Torreon, Mexico. It is said that the plant will produce enough to supply 7 per cent of the needs of rubber and other manufacturers on the Coast and 1½ per cent of the national needs.

The Rocky Mountain Tire & Rubber Co., Great Falls, Montana, started a few years ago with a fine, modern plant, but could not get operating capital. Sales soon fell off and a mortgage fell due without funds to meet it. The plant is still under foreclosure, and a sale of the equipment may soon be ordered.

The American Rubber Manufacturing Co., Park avenue and Watt street, Oakland, California, is operating at full capacity. Recent deliveries were: 40,000 feet of fire hose to the City of Los Angeles; a carload of conveying belts to the Reliance Rock Co., Azusa, California, two of the belts being over 1,000 feet long each, said to be the largest of the kind made on the Coast.

A good demand for low pressure and balloon type tires is reported by the Chanslor & Lyon Co., of San Francisco, operating the King Tire & Rubber Works (formerly Sturges) in Oakland, which operates eight automobile accessory stores on the Coast.

The Universal Rubber Manufacturing Co., 938-958 Harrison street, San Francisco, California, reports good business during the past month. The company manufactures canners' belts, water, oil suction, and discharge hose. Two novelties, a detachable slitter rubber and a tester rubber, used in the canning industry have lately been perfected.

E. J. Palmer, president of the Western Rubber Ace Co., San Francisco, California, manufacturer of sponge-airfilled inner tires, reports a strong demand for Ace tires. A large retail dis-

tributing station will shortly be opened in San Francisco in the heart of the automobile district.

The Willard Rubber Products Co., 621 West Ivy street, San Diego, California, of which Cyrus Field Willard is president, contemplates extending its activities by means of new capital. The company plans to make articles and materials from scrap rubber reclaimed by the Willard desulphurizing processes.

The Spreckels "Savage" Tire Co., San Diego, California, is making 3,000 casings and 3,500 tubes daily. New machinery has been added and a warehouse section has been converted into a factory extension to keep up with the rapid expansion in business. A good grade moderate-priced tire, coupled with good management, is the cause of the company's "come-back" in the recent past.

The Rubber Trade in Canada

The trade in rubbers, overshoes and especially galoshes has been tremendous and according to some Canadian dealers has militated against leather shoe sales. Rubber heels have sold in voluminous quantities. Manufacturers have never experienced such a heavy demand for heels as during the past month, which was four times greater than the same period a year ago. Building activity is still prevalent, and more houses are under construction than this time last year. Business is seasonably good in druggists' sundries, particularly in hot water bottles, due to the continued severely cold weather. Tire prices are close to the lowest ever reached, while crude rubber has doubled in price since last summer. But these things are mostly or wholly offset by the great increase in tire sales, the fall in cord and fabric prices and lower factory costs per tire. The industry should show good earnings this year.

Foreshadowing healthy business activity for the coming year, E. B. Ryckman, president of the Dunlop Tire & Rubber Goods Co., Ltd., presents an encouraging outlook.

"A survey of the industry in Canada shows that it is splendidly equipped to supply the domestic and large foreign demands. The total exports of rubber goods have increased during the past year, while the total imports have decreased, and it is important to know that the imports of pneumatic tires for vehicles during the year ended October 31 last have decreased by 33⅓ per cent, while the exports of pneumatic tires alone during the same period reached the significant sum of $6,300,796."

Rubber Association Dinner and Meeting

The fifth annual dinner of the Rubber Association of Canada was held on the evening of February 12 at the Mount Royal Hotel, Montreal. Sir George Foster, orator of the evening, spoke of the higher ideals in professional life and urged the need of inter-racial friendship. R. L. Calder, K.C., spoke of the grit and courage necessary in solving Canada's economic problems. There was a large attendance representing the trade from all parts of Canada.

The following officers were elected for the coming year at the annual meeting held on the afternoon of February 12 in the Mount Royal Hotel, Montreal: president, F. E. Partridge, F. E. Partridge Rubber Co., Ltd., Guelph, Ontario; vice-president, J. D. Hathaway, Northern Electric Co., Ltd., Montreal, Quebec; treasurer, John Westren, Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ontario; assistant treasurer, Joseph O'Mara, K. S. Tire & Rubber Goods Co., Ltd., Toronto, Ontario; manager and secretary, A. B. Hannay, Toronto, Ontario.

Goodrich Acquires Ames Holden Tire Co.

The B. F. Goodrich Co., Akron, Ohio, acquired a large interest in the Ames Holden Tire & Rubber Co., when the company was reorganized two years ago. The Goodrich company has now secured additional shares sufficient to give control. The new subsidiary will be continued under the present management, but will be renamed the Canadian Goodrich Co., Ltd. The factories at Kitchener, Ontario, have a capacity of 5,000 tires daily.

The Canadian shareholders will continue to have representation on the board. W. B. Wiegand will remain in charge of the operation of the company, which will continue the sale of Ames Holden tires.

Canadian Notes

R. W. Ashcroft, formerly advertising and sales promotion manager of the Dominion Rubber System and the United States Rubber Co., afterwards joining the late T. H. Rieder in his Ames Holden Tire & Rubber Co., Ltd., is now associated with the F. E. Partridge Rubber Co. and the Northern Rubber Co., whose head offices and factories are at Guelph, Ontario. Mr. Ashcroft has been connected with the rubber industry for over a decade.

A delegation of the Bonne Entente, composed of representatives of the Province of Ontario, recently visited Montreal. Prominent in the party was C. N. Candee, president of the Gutta Percha & Rubber, Ltd., Toronto.

The popularity of the galosh, or felt and rubber overshoe, has proved a tremendous impetus to the shoe trade of Kitchener, Ontario. For several weeks the Kaufman Rubber Co. and Ames Holden Tire & Rubber Co., Ltd., were working overtime to fill orders.

The general offices of the Goodyear Tire & Rubber Co. of Canada, Ltd., have been moved to the plant at New Toronto, an executive office being maintained, however, in the city of Toronto. The factory is now running at full capacity on a twenty-four hour schedule. C. H. Carlisle is vice-president and general manager.

The Canadian I. T. S. Rubber Co., Toronto, Ontario, has opened a branch at 450 St. Peter street, Montreal. C. E. Stevenson is manager and his assistants are H. R. Smith and A. Perrault.

L. Trudeau, exclusive distributer for the Pennsylvania Rubber Co. of America, Inc., Jeannette, Pennsylvania, has opened offices at 309 St. James street, Montreal, where a stock of this firm's products will be carried. Mr. Trudeau will look after Quebec territorial trade.

W. H. Galt, sales manager of Gutta Percha & Rubber, Ltd., Toronto, was a recent visitor to Montreal.

At the recent annual banquet of the Shoe Wholesalers Association of Canada, John Myles, of the Columbia Rubber Co., Montreal, gave an inspiring address on "The Business Outlook in Canada."

Bramson's Auto Service, Ltd., Montreal, operating one of the largest fleets of taxicabs in Montreal, has lately equipped the fleet with Goodyear tires. W. J. McNally, Montreal manager of the Goodyear Tire & Rubber Co. of Canada, Ltd., completed the deal.

R. H. Greene, who for some twenty years has been connected with the rubber shoe department of Gutta Percha & Rubber, Ltd., Toronto, and later secretary of the company, has retired from active service. For about twenty-five years Mr. Greene was secretary of the Rubber Shoe Manufacturers Association.

John Westren, vice-president and general manager of Dunlop Tire & Rubber Goods Co., Ltd., Toronto, was elected an officer of the Y. M. C. A. of Canada at the convention recently held in Preston, Ontario.

Twenty-five years ago the rubber footwear industry was founded in Kitchener, then Berlin, Ontario. The first pair of rubbers, made January 24, 1900, are owned and preserved by the Waterloo Historical Society. In 1899 George Schlee, now president and general manager of Kitchener Buttons, Ltd., organized the Berlin Rubber Co., Ltd., with a capital of $35,000 fully paid up, and with George Schlee, Jacob Kaufman, A. I. Breithaupt, and L. S. Weber as stockholders.

"There will be no increase in tires or tubes so far as the Goodyear company is concerned," said C. H. Carlisle, general manager of the Goodyear Tire & Rubber Co., of Canada, Ltd., Toronto, Ontario, when recently asked if tire prices would be advanced this spring.

The Rubber Trade in Europe

Great Britain

Rubber Stocks and Restriction

MUCH interest has been shown in the increased crude rubber export quota, and the official announcement that the percentage for the quarter beginning February 1 had been fixed at 55 aroused great excitement in the commodity market, where conflicting interests had been doing all that was possible to influence the price in opposite directions. According to the *Financial Times* it was, however, a matter of comparative indifference to the plantation companies that the price average stood at 1*s.* 5.9983*d.*, with the small margin indicating that the quota would be raised 5 per cent instead of 10 per cent, as had been thought probable. With stocks now down to the lowest level seen for more than four years the question whether supplies should be increased by 350 or 700 tons a week for the next three months was to these producers a matter of little moment.

The *Financial Times* states further:

"The quantity of crude rubber held in London represents no more than the world's consumption for three weeks. Moreover, such stocks as we have are still declining. It seems clear, therefore, that a release of 5 per cent, or 1,500 tons, monthly for the next three months renders an already tight situation still tighter, and that 10 per cent would have been barely sufficient to meet the expected demand. For last year the world's production is put at 400,000 tons, and the total consumption at 470,000 tons. During 1925 it is expected that, on a 60 per cent restriction basis, supplies from all sources would be about 482,000 tons, against an estimated total consumption of 503,000 tons.

"It is evident that such stocks as exist will be further depleted during the current year. It had been hoped that it would have been possible ere this to bring the restriction scheme to an end, but that is still merely a possibility of the future. If an average of not less than 1*s.* 6*d.* per pound had been maintained to the end of the restriction year next October, producers would have begun the fourth year on a 90 per cent output basis. But although that seems now out of the question, it is of interest as showing how quickly the rate of output can be raised under the most favorable circumstances."

The Institution of the Rubber Industry

On February 2 a meeting of the London and District Section of the Institution of the Rubber Industry was held at the Engineers' Club, London, H. C. Young presiding as chairman. On this occasion a paper was read by W. G. Martin on "The Calender in the Rubber Industry." An informal dinner in the Kelvin Room of the club followed. At the Manchester meeting held February 19 John Haworth made an address on "The Waterproof Garment Industry in Manchester."

Fordyce Jones is to be the leading speaker at the meeting of the London Section, to be held March 2, and he will take as his subject "Standardized Rubberware." At the Birmingham meeting on March 18 Dr. C. S. Myers will speak on "Industrial Psychology as Applied to the Rubber Industry," while at the joint meeting in Manchester of the Institution of the Rubber Industry and the Society of Chemical Industry the leading paper, "The Joule Effect," will be read by R. W. Lunn. The Institution's annual dinner is scheduled for March 16, and will be held at the Hotel Victoria, Northumberland avenue, London.

Meetings of Other Organizations

Interesting sessions were held on January 27 by the India Rubber Manufacturers' Association, at the Midland Hotel, Manchester. Alexander Johnston presided at the luncheon and general meeting. The annual report of the organization revealed a satisfactory financial condition, while there has also been a constant accession to the membership during the past twelve months. It is believed that the association now represents over 90 per cent of the manufacturers of British rubber goods.

Two papers were read on January 13 at the Birmingham Section of the Society of Chemical Industry, one on "The Testing of Resistance to Tearing," by H. L. Heathcote, while the other, entitled "A Comparative Study of Some Vulcanization Accelerators," had been prepared by D. F. Twiss and F. Thomas.

Improvements in British Automotive Industries

Not only has there been during the past year an encouraging gain in the production of British automobiles, the output being 50 per cent greater than for 1923, but there has been also a correspondingly great development in the English tire trade. Statistics show that in 1921 only 163,000 British tires were exported and 271,000 in 1922, as compared with 487,000 in 1920. In 1923 the number had advanced to 397,000, and there is every indication that the British 1924 exports of automobile casings will at least equal the 1920 figure. "Considering this steady recovery to the 1920 volume of export trade—which is a better record than American companies have been able to make—it seems that the British tire industry has now passed through its crisis, and that it may become an increasingly important factor in the export tire trade in future years."

In this advance the Dunlop organization has been playing a leading part. It has been stated on good authority that, next to the Michelin organization, the Dunlop company is the chief foreign competitor of American tire firms in export trade. "While there are tire manufacturers of importance in England other than Dunlop—such as the North British Co., Avon, Palmer, Spencer Moulton, and British Goodrich—these firms have been of little importance in export trade, the North British Clincher tires being most widely known. The preferential tariff rates enjoyed by British tires in British South Africa, the British West Indies, British Guiana, and several other markets give Dunlop an advantage over all but Canadian-made tires in those markets. The fact that British merchants are established in all parts of the world makes it less difficult for Dunlop to secure distributers than for some of its competitors."

With imports of casings also declining from 106,000 monthly in 1923 to 56,700 monthly for nine months of 1924, the English tire industry has apparently little to fear.

British Notes

C. P. Skinner has been appointed managing director of the Goodyear Tire & Rubber Co. (Great Britain), Limited, succeeding E. R. Preston, who has resigned his duties and returned to the United States. Mr. Skinner has for years been associated with the rubber industry, and until recently has been in charge of the Goodyear interests in South Africa.

The business formerly maintained by the New Gutta-Percha Co., Limited, will in the future be carried on as the Greenwich Cable Works, Limited. The first-mentioned organization was established about 22 years ago to manufacture a material now known as Pernax, but since then a complete cable-making plant has been installed.

An amalgamation of interests has been announced by the Werneth Rubber Works, Limited, of Burton-on-Trent, and J. Pedley & Son, Limited, of Birmingham and London. Both organizations have been engaged in the manufacture of cycle tires, particularly

during the War, while the last-mentioned company, organized in 1840, has also gained a reputation for its tires and various rubber accessories.

The Dunlop company has formed a special department to deal with the question of tire and wheel equipment for public service vehicles of every description. This section, to be known as the Public Transport Division, will be in charge of W. J. McCormack, sales manager.

Germany

While the year 1924 began promisingly, it soon brought numerous disappointments. With the introduction of the Rentenmark on the collapse of the paper mark, it was generally considered that Germany's woes were at an end, and stability and prosperity were in store. The staggering figures of the inflation period had wrought their share of confusion and the new calculations on the gold mark basis showed a startling state of affairs. The profits indicated by the large sums were fictitious profits, for frequently manufacturers and others had actually done business at a loss when they imagined they were booking gains. In order to make up for these losses prices were put up, with the result that customers dropped off. This caused a change of tactics to the other extreme and underselling became the order of the day.

The lower prices forced foreign sellers to cut too, and the unexpected result was that foreign goods were thrown on the German market. What with the removal of import restrictions it is to be expected that foreign competition in Germany will continue to grow, as that country, being dependent on other nations for raw materials, can not do much in the way of protective legislation to check this condition.

German prosperity was further hampered by the taxing policy of the government. Complaints have been loud and long concerning the high rates, whereat the government promised to look into the matter with a view to alleviating the situation. But after much deliberation some minor reductions were granted which did little or nothing to improve the condition and protests are as vigorous as ever.

Toward the end of the year a slight improvement in the rubber industry as well as in the gutta percha and balata branches was reported, a circumstance which optimists would like to interpret as an indication of better times in 1925.

Germany's Rubber Center

The most important rubber factories in Germany are situated in the territory of the Industry and Chambers of Commerce Bond of lower Saxony-Kassel. Only 1921 figures are available; nevertheless they serve to indicate the extent of the industry. According to these official statistics there are 343 factories working rubber and gutta percha in Germany. These give employment to 26,045 male and 14,981 female workers, in all 41,026. The percentage of persons employed in the rubber industry is 0.5 as compared with the total number of factory hands in Germany.

For the territory under discussion the factories number 50, with 10,996 male and 5,225 female employes, a total of 16,221, showing that while the district has about one-seventh of the rubber factories these employ over one-third of the total number of workers.

The separate localities included in this territory are district of Hannover, 29 factories with 12,040 workers; district Harburg, 10 factories with 3,431 workers; Hildesheim, 2 factories with 427 workers; Göttingen, 4 factories with 163 workers; Osnabrück, 2 factories with 89 workers; Bielefeld, one factory with 59 workers; and Oldenburg, 2 factories with 12 workers.

The oldest establishments are in Harburg where the preparation of gutta percha was started as early as 1848. In 1858 Hildesheim got its first rubber factory. In Hannover, the Akron of Germany, the first rubber factory was founded in 1862.

Practically every imaginable article made of rubber, gutta percha or balata is made in this territory.

German Exhibitions

A General German Hygiene Fair is to be held in Berlin from March 1 to March 8, 1925. The Reichsbund Deutscher Sportartikel-Fabrikanten (National Association of German Sporting Goods Manufacturers), Berlin, has issued invitations to those interested to participate in the permanent exhibition of sporting goods at Leipzig. This exhibition will be opened at the time the Spring Fair of 1926 is held.

In order to leave more time between the Leipzig Spring Fair and the similar Fair at Cologne the date for the opening of the latter has been postponed, so that the dates are now: General Fair, March 22 to 27; Technical Fair, March 22 to 31.

German Company Notes

The New York-Hamburger Gummi-Waren-Compagnie has followed its numerous predecessors and has put its balance on a gold mark basis. Its capital now is 5,000,000 marks instead of 30,000,000 paper marks, and the amount of 324,519.15 gold marks has been put to reserve.

An indication of the difficulties the German industries are going through is the number of firms recently declared insolvent. In the rubber industry two well-known firms have failed. The property of the Offenbacher Gummiwerke Karl Stöckicht, Offenbach-am-Main, in liquidation, was sold at public auction to a group which will operate under the name of Maingau A.-G., Offenbach. The two factories will not continue to produce rubber goods.

It is also learned that the M. & W. Polak Gummiwarenfabrik A.-G., Merseburg is insolvent.

Austria

During May and June a double exposition has been arranged for Vienna. The first will show the complete "Hygiene of Human Living," everything connected with the health, physical as well as spiritual, of the individual and of society.

The second part of the exposition is "The New Household." All the methods of lightening and simplifying the burdens of housekeeping will be shown, besides the developments in improving housing in general.

In the *Wiener Klinischen Wachenschrift*, Dr. H. Markus points out that head-phones for radio often cause dermatitis of the ear when these phones are made of cheap compositions. The condition was not noted when the phones were made of hard rubber. Apropos of this, in Germany soft rubber cushions or cushions of sponge rubber are recommended both for radio and telephone.

Italy

The Italian Rubber Industry

The birth of the rubber industry in Italy may be said to have taken place in 1872 when the firm of Pirelli & Cia was founded in Milan with a capital of 250,000 lire. Two years previously, in 1870, Jean Baptist Pirelli was sent by the Italian Government to visit foreign countries and gain experience of the rubber manufacturing industry there. He returned one year later full of enthusiasm over the possibility of creating a similar industry in Italy.

The first articles produced by the newly established Pirelli concern included hard rubber and rubber bands. In 1884 the manufacture of cables was begun and a year later the firm was commissioned by the Spanish Government to lay cables from Morocco to Spain. In 1889 insulated telephone wires were first made.

Now the firm manufactures many articles, including the well-known Pirelli tires, and the capital of 250,000 lire with which it began has grown to 120,000,000 lire!

Other important Italian rubber companies include the Walter-Martiny-Industria-Gomma in Turin, capitalized at 9,000,000 lire and the Bergougnan & Tedeschi Company, with capital of 10,000,000 lire, also in Turin.

Latest statistics show that Italian exports of manufactured

rubber goods over the first quarter of 1924, were valued at 41,692,233 lire. During the first nine months of 1924 imports of crude rubber came to 67,408 quintals; imports of regenerated rubber to 289 quintals; during the same period cured gutta percha imports were 1,949 quintals, while the amounts of gutta percha in sheets and slabs totaled 46 quintals.

Russia

The Soviet Commercial Representation in Germany has issued Bulletin No. 12 in which figures for the Russian rubber industry over September 30, 1923—September 30, 1924 are included.

From this it would seem that Russia imported, over the European border, rubber goods amounting to 1,248 tons, value 3,150,000 rubles against 770 tons value 2,190,000 rubles in 1913. Crude rubber arrivals were 2,438 tons, value 7,678,000 rubles against 12,744 tons, value 40,151,000 rubles in 1913. Exports of rubber footwear and other rubber goods during the period under discussion totaled 150 tons, value 282,000 rubles, against 3,571 tons value 5,406,000 rubles in 1913.

Sweden

During 1924 Sweden imported 1,814,583 kilos of rubber against 1,414,784 kilos in 1923. At the same time the imports of manufactured goods included 159,505 kilos and 117,143 kilos of rubber footwear in 1924 and 1923 respectively; clothing combined with rubber came to 329,716 kilos in 1924 and 325,817 kilos in 1923. Other articles of soft rubber totaled 2,753,114 kilos in 1924 against 2,239,997 kilos in 1923.

Exports of rubber footwear were 534,514 kilos and 522,989 kilos in 1924 and 1923 respectively, while amounts of rubber waste leaving the country in 1924 totaled 203,676 kilos against 270,578 kilos in 1923.

IMPORTS OF CASINGS INTO NEW SOUTH WALES

During the calendar year 1923 there were imported into the State of New South Wales a total of tires and tubes valued at £880,292, of which more than one half were furnished by the United States. Pneumatic casings from all sources totaled 3,212,282 pounds, value £645,072, the United States supplying 1,673,972 pounds, value £339,075. Imports of tubes were estimated at 351,749 pounds, value £66,165, the share of the United States being 156,866 pounds, value £29,394. Imports of rubber tires other than pneumatic reached a value of £169,055, toward which total the United States contributed £97,023. Following the United States, the leading exporters to this market were Canada, France, and the United Kingdom.

Trade in both pneumatic and solid tires is highly competitive, but the American tire seems to hold its own, and is not declining in popularity. The daily output of the three leading manufacturers in the Commonwealth has been estimated as follows: Dunlop Rubber Co., 750 tires; Perdriau Rubber Co., 250 to 300 tires; and Barnet Glass Co., approximately 100 tires.—*Commerce Reports.*

DURING THE FIRST ELEVEN MONTHS OF THE PAST YEAR AUSTRIA imported from the United States 59,035 pairs of rubber boots, value $109,891, and 223,498 pairs of rubber shoes, value $212,481. The amounts were especially heavy during the last half of the period mentioned, the August purchase being 44,059 pairs of rubber boots, value $85,608, and 62,227 pairs of rubber shoes, value $84,519. During September Austria also bought from the United States 102,467 pairs of rubber shoes, value $55,351.

DURING OCTOBER THE LEADING CUSTOMERS FOR AMERICAN-MADE solid tires were: England, $62,559; Cuba, $27,226; New Zealand, $16,853; and Argentina, $10,151. England's November purchase was estimated at $38,017; Cuba took goods having a value of $24,356, and Australia $22,954.

Interesting Letters from Our Readers

America's Chance in Rubber

TO THE EDITOR:

DEAR SIR:—With much interest I read your editorial, "De Kalb on American Owned Rubber" in THE INDIA RUBBER WORLD, September 1, 1924, where possibilities were discussed of growing rubber in America.

However attractive to Americans may be the owning of rubber plantations in their own territory or in South America, they shall have to give up their desideratum if they expect to compete with other rubber producing countries with the smallest chance of success.

The Americans need not regret that they have missed their chance to obtain large concessions in the Amazon Valley as the rubber industry in that region is bound to disappear in the future, because 20 cent rubber is not very distant, and the Amazon Valley will never produce rubber at such a low price.

The prospects for rubber cultivation in the United States are still worse and if you ever succeed in producing a tire of American grown rubber it will be a thing of extraordinary curiosity. If you want to protect your home grown produce by means of protective duties, you will have to give up competition with the rest of the rubber manufacturing world.

Henry Ford's effort is a chimera. How will he grow rubber under abnormal climatic conditions and with daily wages of three and four dollars, when we can pay coolies from twenty to thirty cents? You suggest to plant *Ficus elastica*. Let me tell you that the harvesting costs of Ficus in its native country do not pay.

And still you have not yet missed your chance if you come to Java or Sumatra. You have got the capital, here is the land and the labor to work it. You are certainly outdistanced by lack of experience, but there are great advantages to counterbalance this handicap. Eighty per cent of the rubber you consume is produced by trees originated from the worst seeds. These trees have been ill treated by close planting and over tapping. Most of the producing rubber estates are on the decline and will have to open new land because the topsoil of the older plantations is completely washed and not fit for replanting.

The future of rubber cultivation is in the new estates.

We know where and how to obtain excellent planting material. We have learned the disastrous results of clean weeding and the importance of preserving the top soil. We have realized the advantage of planting green manures and can choose those that are best for special soil and special climatic conditions.

We have learned to select our trees and to keep the best producers. With our new method, we will double our production without exhausting our trees and secure a duration of fifty years instead of twenty-five.

No, America has not yet missed her chance! If you are going to take it, here is some advice from an old hand. Don't hurry. Don't try to get a maximum of planted area in a minimum space of time.

You will have to start in jungle land, probably under very unfavorable conditions as regards climate and health. You will have to import thousands of coolies, build lines and sheds, bungalows and hospitals.

It will take time to secure good planting material, be it seeds or bud grafts.

Opening 1,000 acres on a certain estate may cost you $40 per acre while 2,000 acres in the same period will require an expenditure of $60, and the work will be worse. Most mistakes made in cultivation at the start cannot be repaired.

The Hoover Commission may give you useful information on the subject, and the matter is well worth thorough investigation.

Java W. DE VOS.

REPLETE WITH INFORMATION FOR RUBBER MANUFACTURERS—H. C. Pearson's "Crude Rubber and Compounding Ingredients."

The Rubber Trade in the Far East

Malaya

THE year 1924 did not begin as favorably as 1923 and before the year was half over it seemed as though the worst fears of pessimists were about to be realized. The steady drop in the price of rubber with restricted output at one time bade fair to reproduce some of the worst features of the slump; in fact in some cases cutting down of the European staff was again resorted to, with the result that quite a number of experienced planters are now unemployed.

Fortunately rubber rallied again and by the end of the year was quoted higher than at any time since the middle of 1920.

This has given rise to optimistic opinions regarding prices and output for the current year, some authorities feeling that the restricted output will be at least 70 per cent by the end of this year if not higher, and there is even a certain amount of indulgence in reflections on the end of restriction in the near future.

Conservative opinion takes into account the uncertainty of the commodity and while granting that the outlook is good, the memory of unexpected turns in the market is apparently still too fresh for the overlooking of untoward possibilities to seem to be justified.

In certain quarters the removal of restriction is awaited with eagerness for the opportunity it will offer to "get even" with the Dutch for having kept aloof. It is popularly believed that the cost of production has been reduced to a much lower level in Malaya than in Java and Sumatra, and it is tacitly assumed that the Dutch have been badly over-tapping and will be at a disadvantage when Malaya and Ceylon begin to draw on their bast reserves.

Incidentally it should be added that the Dutch deny over-tapping and some people express a doubt as to whether prolonged rest really will yield the results expected in Malaya. But the latter, one might rightly argue, is a statement of the kind the fox made when he could not reach the grapes.

Restriction Statistics

	Total Exports British Malaya. Tons.	Total Exports Restriction Area. Tons.	Total Imports Foreign Rubber. Tons.
November, 1924.....	22,488	15,469	9,617

DEALERS STOCKS NOVEMBER, 1924

	Tons.
Singapore Island	16,167
Penang	3,475
	19,642

RUBBER FROM RESTRICTION AREA ON WHICH DUTY WAS PAID DURING NOVEMBER, 1924

	Tons.
Federated Malay States.....	8,640
Straits Settlements	1,679
Johore	3,358
Kedah	1,411
Kelantan	279
Trengganu	102
	15,469

Stocks afloat in harbor—November rubber declared in December—431 tons.

A New Cooperative Selling Scheme

Little has been heard recently of the rubber cooperative selling agency broached by the Rubber Growers' Association and most people had put it out of their minds. It has been revived by a proposed scheme submitted at a meeting of the Malayan Planters' Association by A. Cavendish, in charge of Cooperative Societies, Straits Settlements and Federated Malay States. He explained the meaning of the term and pointed out that the cooperative system did not eliminate the middleman, although the number was actually reduced thereby. A practical cooperative system would save much money to sellers on transportation if the volume of business was sufficiently large to charter trains and steamers.

This plan provided for local cooperative societies in each state, which would form a central exchange with headquarters in London with a very competent managing director. There would also be a branch of the central exchange in Singapore and New York, and in the large rubber manufacturing centers also there would be selling agents.

Mr. Cavendish emphasized the point that the selling agency would not seek to make profits. The main interest of the producer was to get his rubber marketed as cheaply as possible. Large capital was not necessary, but expert management and large membership bound by long term contracts were essential to the scheme.

Mr. Cavendish added that at present he was busy organizing a cooperative selling agency among the small holders who own about 40 per cent of the area under rubber.

Rubber Smuggling

The frequent publication of reported seizures of smugglers is evidence that the high price of rubber continues to tempt the more daring Malay and Chinese to brave the preventive fleet and make a dash for the neighboring Sumatra coast. It is officially made public that for the quarter July to September 1924, the total quantity of rubber seized on captured smuggling boats was about 1,302 picals, around 87 tons. Most of this rubber came from Johore. If this is the amount of rubber unsuccessfully smuggled, one is inclined to ask how much boot-leg rubber actually reached Sumatra.

Bath Mats and Vulcanized Crêpe Soles

The Devon Estates (Malacca) Ltd., is an enterprising concern that not only produces rubber of excellent quality, but is investigating the possibilities of new uses for rubber through the vulcanization of latex. The present products include vulcanized bath mats in attractive designs and Vulsole footwear crêpe. The mats are manufactured on a fairly large scale and regular shipments are made to London.

In discussing the superiority of the Vulsole crêpe over the ordinary plantation crêpe sole, the chairman of the company quoted a statement of THE INDIA RUBBER WORLD that vulcanized crêpe was so far superior that it was sure to be introduced.

Devon Estates has recently arranged with Vultex Ltd. and Vultex Products Ltd. of London for working their latex processes on the estate. At present it is equipped for handling and vulcanizing latex in bulk and a factory equipped with machinery for the manufacture of the articles mentioned above is in course of erection.

Ceylon

The following statistics have been supplied by the Rubber Controller for Ceylon:

Standard production for estates of 10 acres and over: 1922-23, 56,317 tons; 1923-24, 55,901 tons; 1924-25, 58,979 tons. For estates under 10 acres: 1922-23, 3,717 tons; 1923-24, 6,381 tons; 1924-25, 6,828 tons. Total standard production: 1922-23, 60,034 tons; 1923-24, 62,282 tons; 1924-25, 65,807 tons.

The exports of rubber from Ceylon during the year 1924 came to 37,945 tons. As for latex shipments, 70 gallons were sent in January, 50 in July, 11,253 in November and 47,960 in December. No latex was exported in the intervening months. Total latex

exports for the year were 59,333 gallons. In 1923 11,178 2/3 gallons were shipped and during the last two months of 1922, 2,041 gallons.

Rubber exports for the five preceding years were: 46,081 tons in 1919, 39,532 in 1920, 39,341 in 1921, 46,694 in 1922 and in 1923 37,070 tons.

According to a *Times of Ceylon* representative, part of the heavy December shipments of latex was consigned to Fibrok, Limited. This firm has offices in London and a factory at Northampton and the latex it seems is used to impregnate fine fibers to form a middle sole to secure adhesion of crêpe soles to leather shoes.

It is suggested that if this method really causes important developments, it may be found more economical to carry out the impregnating process in the producing centers.

The Ceylon Government is now restricting latex, three pounds of dry rubber being held equivalent to 1 gallon of fluid latex. On this basis latex is liable to pay duty of 2½ cents per pound, plus ¼ cent rubber restriction fee.

It is thought that the sudden heavy shipments in December are due, in part at least, to the known plan to restrict latex as from January 1, 1925.

Netherlands East Indies

It is reported that Tan Kah Kee, the well-known Singapore manufacturer and rubber grower, is negotiating for the purchase of the rubber factory at Bandoeng. Tan Kah Kee has four rubber estates in Malaya with a total area of 8,000 acres, of which 3,000 acres are productive. The monthly crop, with 50 per cent restriction, is said to be 500 piculs (picul = 133⅓ pounds).

This concern, it is said, buys 3,000 tons of native rubber in 20 different places in Malaya and three places in the Dutch colonies, which is reworked in its various factories, the largest of which has 80 mills and can work 1,200 piculs a day. About 90 per cent of this reworked rubber is sent to New York and 10 per cent to London. Only about 50 tons are used monthly in the factory for footwear, soles, coats, inner tubes and the like.

It is reported that Mr. Tan Kah Kee visited Java with a view to purchasing the factory at Bandoeng and to establish selling depots in the island, of which there are already some in Batavia, Bandoeng, Samarang and Soerabaia.

Dutch Native Rubber

At a meeting of rubber planters held at Bandoeng, Java, on December 22, 1924, Mr. Wynaendts van Resandt lectured on the subject of native rubber in Sumatra.

Of late many conflicting opinions regarding this topic have been published, which the lecturer explained by the fact that native planting could be seen in every possible form, from the most primitive to up-to-date estates run on the European style. Therefore, the views of the individual investigators differed according to the districts they happened to visit.

Most of the native rubber is on the East Coast of Sumatra in the territories bordering on the Straits of Malacca. This localization of the industry is for the most part due to the direct influence of Chinese rubber dealers in Singapore, the only market for the production.

The native industry in the plains of Central Sumatra is thus explained: In 1905, the Dutch ruled that taxes were to be paid in cash instead of in natural products, that the natives had to have fixed places of residence, that they should work regularly. This did not please the natives and many left for Malaya, where they became acquainted with the rubber industry and when conditions in Sumatra were more favorable they returned and began to make use of their newly gained experience with rubber, which they planted everywhere.

In this district the system is most primitive, the trees are overtapped and often badly wounded. The rubber is bought up by Chinese, who pay as little as possible and by a system of credits on crops not yet harvested seek to get still more power over the native. This condition is fairly general except in Palembang and certain districts in Indragiri where the population has a more highly developed commercial sense.

Mr. Wynaendts van Resandt is inclined to ascribe the greatest importance to the relation between native plantings and the activities of the Chinese dealers in Singapore. Many of these dealers have invested large sums of money in factories working native rubber and are said to be making huge profits. It is to their interest to keep the natives producing rubber, that is, moist, badly prepared rubber that can be bought up for a song to be profitably reworked. So that the lecturer thinks in case of a crisis in the native industry, in self-defense Chinese would come to the assistance of natives with credits. For this reason alone he considers all hopes of the ultimate ruin of the native industry to be vain.

As for the advantages the native has over the European, the native has no money investment in his plantation and no expenses for taxes, supervision and the like. This advantage is important in bad times when the expenses of the European estate go on as before. In all other respects the European has the advantages, particularly in higher yields per acre, proper tapping and upkeep, ability to work scraps, bark and lump rubber, and better marketing facilities.

The lecturer estimates the number of tappable trees in Sumatra at 40 to 50 millions, and the total number of trees planted at 100,000,000. Of this roughly 25,000,000 is suggested as Djambi share, 10,000,000 for Indragiri, 3,000,000 for Siak and the rest in Palembang and Deli. If prices went high enough to warrant tapping all these trees, Djambi and Indragiri alone would require about 105,000 tappers, while the total population of the two districts is not even 300,000. This low population will be the chief factor in limiting the expansion of rubber planting in these districts.

The conclusion deduced from all this is that the European has little to fear from native competition.

Taxation of Native Rubber

Despite the fact that the People's Council rejected the proposal to put an export duty of 5 per cent on native rubber, the item is nevertheless included in the budget. It is calculated that this tax will yield 500,000 guilders in 1925.

In some quarters it is expected that this tax will succeed in curbing the production of native rubber. This action has aroused the educated natives who protest against what they call an attempt to ruin a native source of income to benefit the European planters.

New Gutta Percha Estate

The Director of Agriculture in Java announces that the government is to open up a new gutta percha estate in Bila, Sumatra. The total costs are estimated to be 1,856,000 guilders.

This will be the second government gutta percha enterprise. The well-known estate Tjipetir in Java which has yielded good results is unable to satisfy the demand for clean plantation gutta percha. It is believed that Sumatra offers better growing conditions for gutta percha. Moreover, the experience gained at Tjipetir provides planting up the new estate with high yielding trees.

The new estate covers an area of 700 hectares (hectare = 2.45 acres) and the estimated cost per kilo (2.2 pounds) f.o.b. is put at 1.59 guilders, against the present cost of 2.50 guilders on Tjipetir.

It has not been possible to interest capital in planting gutta percha, but a successful estate in Sumatra is expected to have the desired result.

The Director of Agriculture will make an official visit to Sumatra in connection with the new estate at Bila.

Recent Patents Relating to Rubber

The United States

Issued* January 20, 1925

No. 1,523,510 Tire storage system. M. J. Bray, Springfield, assignor to the Fisk Rubber Co., Chicopee Falls, both in Massachusetts.

1,523,587 Tire flag. D. R. Dixon, Suffolk, assignor of one-half to W. R. McGeorge, Richmond, both in Virginia.

1,523,638 Tennis racket with rubber cap and cover for handle. A. L. Freedlander and W. G. Goodwin, assignors to The Rubber Development Co., all in Dayton, Ohio.

1,523,842 Composite sponge. T. Schroeder, St. Louis, Missouri.

1,523,923 Cushion wheel and tire. J. Walker, Barrie, Ontario, Canada.

1,523,979 Scalp massage apparatus. F. B. Ryan, Short Hills, New Jersey, and C. F. Doscher, White Plains, New York, assignors to Thompson-Barlow Co., Inc., New York, N. Y.

Issued* January 27, 1925

1,524,008 Combined sponge and soap holder. S. Anastasia, Boston, Massachusetts.

1,524,049 Rubber boot. F. H. Martin, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,524,114 Combination solid and pneumatic tire. R. M. Temple, Akron, O.

1,524,171 Golf ball. A. S. Chatfield, Flushing, New York.

1,524,177 Armored tire. B. Granville, New York, N. Y.

1,524,186 Mandrel for tire tubes. C. E. Lowe, Cleveland, Ohio.

1,524,209 Cushion tire. E. Pistorius, Annaberg, Germany.

1,524,460 Lifting roller for drop hammers. F. L. Smith, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

Issued* February 3, 1925

1,542,659 Brassiere with elastic sections. W. Kops, assignor to Nemo Circlet Co., Inc., both of New York, N. Y.

1,524,660 Corset with elastic sections. W. Kops, assignor to Kops Bros., both of New York, N. Y.

1,524,718 Cushion tire. J. H. Leach, Oakland, California.

1,524,853 Rubberized toilet seat protector. M. Beam, Bloomington, Illinois.

1,524,997 Crêpe rubber sole and heel for boots and shoes. S. S. Potter, Manchester, assignor to A. Harrison, Blackpool, both in England.

1,525,088 Armored tire. M. Nüesch, Thurston, Nebraska.

1,525,099 Pneumatic tire pressure gage. H. J. Le Vesconte, assignor by mesne assignments to Tiregage Valve Corporation, both of Charleston, West Virginia.

1,525,298 Knee protector with elastic bands. T. J. Hartman, Chicago, Illinois.

1,525,333 Bather's cap and purse. A. S. Speirs, New York, N. Y.

Issued* February 10, 1925

1,525,573 Quick detachable connection for tire valve stems. W. R. Donaldson, Phœnix, Arizona.

1,525,594 Reinforced form-fit water bottle. W. F. Sesser, assignor to M. A. Sesser, both in Alhambra, California.

1,525,869 Sponge rubber saddle for cycles and other vehicles. A. H. Lakeman, London, England.

1,525,910 Detachable rubber tip for billiard cues. E. Blair, Canton, Ohio.

1,525,955 Fountain comb. M. H. Sanders, Seattle, Washington.

1,525,957 Hose supporter. L. M. Schneider, New York, N. Y.

1,526,091 Corset with elastic strips. P. H. Robbins, assignor to Poirette Corsets, Inc., both in New York, N. Y.

1,526,109 Shoe attachment for vehicle wheels. P. Arena, Whitefish, Montana.

1,526,141 Abdominal rubber reducing garment. R. H. Guinzburg, assignor to I. B. Kleinert Rubber Co., both of New York, N. Y.

1,526,194 Collapsible rim for tires. A. Wood, Davenport, and E. S. Abram, Heaton Chapel, both in England.

1,526,267 Rubber mat. M. M. Dessau, London, England.

1,526,271 Tire inflation valve. A. A. Ewald, Oakfield, Wisconsin.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

The Dominion of Canada

Granted January 20, 1925

246,148 Rubber reducing garment. L. M. Ullman and David A. Lederer, both of New Haven, Connecticut, U. S. A.

246,154 Soft rubber container for sensitized dental X-ray films. L. M. Bolin, Chicago, Ill., U. S. A.

246,219 Golf ball. The Dunlop Rubber Co., Ltd., assignee of A. E. Penfold, Birmingham, county of Warwick, both in England.

Granted February 3, 1925

246,487 Repair vulcanizing material and apparatus. R. H. Churchill, Chicago, Ill., U. S. A.

246,491 Disk wheel with composition rubber core and rubber sidewalls. H. H. Duke, Sydney, New South Wales, Australia.

246,574 Cushion connection for vehicles. The International Motor Co., assignee of A. F. Masury and A. H. Leipert, all of New York, N. Y., U. S. A.

246,577 Cushion connection for vehicles. The International Motor Co., assignee of A. F. Masury and A. H. Leipert, all of New York, N. Y., U. S. A.

246,578 Cushion connection for vehicles. The International Motor Co., assignee of A. F. Masury and A. H. Leipert, all of New York, N. Y., U. S. A.

246,579 Cushion connection for vehicles. The International Motor Co., assignee of A. F. Masury and A. H. Leipert, all of New York, N. Y., U. S. A.

246,581 Non-metallic connection for torque rods. The International Motor Co., assignee of F. A. Keihn, Brooklyn, both in New York, N. Y., U. S. A.

246,582 Body suspension for motor vehicles, employing non-metallic cushioning. The International Motor Co., assignee of W. B. Jopp and G. O. Hanshew, all in New York, N. Y., U. S. A.

246,583 Spring suspension with yielding, non-metallic connections. The International Motor Co., assignee of A. D. Robbins, both of New York, N. Y., U. S. A.

246,594 Tire protector, comprising a rubber ring. The Quebec Sales Co., Ltd., assignee of H. M. Richardson, assignee of H. H. Hastings, all of Toronto, Ontario.

Granted February 10, 1925

246,622 Rubber reducing girdle. L. M. Ullman and D. A. Lederer, both of New Haven, Connecticut, U. S. A.

246,626 Hat size reducer. L. Cohen, St. Louis, Missouri, U. S. A.

246,658 Boot or shoe. The Ames-Holden Tire & Rubber Co., Ltd., assignee of P. Y. Smiley, both of Kitchener, Ontario.

Granted February 17, 1925

246,807 Detachable heel for boots and shoes. R. B. Chalue, Toronto, Ontario.

The United Kingdom

Published January 14, 1925

224,959 Drainage standpipe with tapered rubber spigot. J. W. Lowe, 7 Millman street, Holborn, London.

225,154 Resilient packing device for spark plugs. Beru Akt.-Ges., Ludwigsburg, Württemberg, Germany.

Published January 21, 1925

225,297 Manhole cover employing rubber strips. S. H. Adams, The White House, Sandsend, Yorkshire.

225,310 Inflating valve for football bladders. H. R. Hart, 141 North Mountain avenue, Montclair, New Jersey, U. S. A.

225,326 Metal and rubber heel protector. T. Thomas, Gwili Villa, Campbell Terrace, Mountain Ash, Glamorgan.

225,461 Rubber cushioned horseshoe. H. A. Bartlett, The Forge, Rectory Road, Farnborough, Hampshire.

225,531 Hinge with vulcanized rubber sleeve member. R. Salin (née Levy), 6, Avenue Perrichont, Paris, France.

Published January 28, 1925

225,642 Sheep-dipping tank with cushioned edge. A. C. Stewart, Arrievean, Tyndrum, Perthshire.

225,677 Garter button. M. McCrea, Astor Hotel, Princess Square, Bayswater, London.

225,693 Felt and rubber leggings for polo ponies. T. U. Clarke, 48 Caldecott street, Rugby.

225,770 Hot water bottle, with filling nozzle at right angles to the plane of the bottle. C. W. Read, 2A Harder's Road, Peckham, London.

225,784 Surgical truss employing sponge and sheet rubber. H. W. Franklin, 11 Colvestone Crescent, Dalston, London.

225,791 Rubber reducing corset. J. A. Weil, 125 Hill street, New Haven, Connecticut, U. S. A.

225,792 Rubber springs for vehicles. Spencer, Moulton, & Co., Ltd., and C. W. C. Hine, 2 Central Buildings, Westminster.

225,794 Hot water bottle with sponge rubber jacket. W. R. Beldam, 1A, New London street, London.

225,807 Rubber composition paving block. Rubber Latex Research Corporation, assignee of W. B. Westcott, both of Boston, Massachusetts, U. S. A.

Published February 4, 1925

225,915 Hot water bottle. W. R. Beldam, 1A New London street, London.

226,101 Rubber mudguard. C. H. Davies, 2 Arches, Stalybridge station, Stalybridge, Cheshire.

226,028 Universal joint employing inflated beaded tube. F. R. Simms, Percy Buildings, Gresse street, Rathbone Place, London.

226,101 Molded rubber fender for ships. C. W. Read, Armoury Mills Rubber Works, Conington road, Lewisham, London.

Chemical patents will be found on pages 347-348, Machinery and Process Patents on pages 353-354

Germany

Patents Issued With Dates of Issue

408,008 (May 9, 1923). Cushion tire and method of making it. Edward Hubbard Fitch, Hudson, Ohio, U. S. Represented by B. Tolksdorf, Berlin W. 9.

408,449 (October 10, 1923). Catheter. Kurt Andreas, Cosmannsdorf, Bez. Dresden.

408,524 (February 1, 1924). Device for automatic closing up of holes in air tubes. Pierre Joseph François Souviron, Tarbes, Hautes Pyrenées, France. Represented by Dr. D. Landenberger, Berlin S. W. 61.

408,534 (June 1, 1924). Mat with rubber lining. Leo Grossmann, Dorfstrasse 36, Berlin-Mariendorf.

408,824 (April 5, 1922). Sponge rubber filling. Wilhelm Ferger, Lupusstrasse 6, Cologne.

408,935 (December 30, 1922). Sanitary bandage. Max Manfred v. d. Heyden, Leipzigerstrasse, Berlin.

408,970 (July 13, 1924). Pessary. Dr. Wilhelm Key, Klinikstrasse 40, Giessen.

408,989 (December 15, 1922). Tread. Lewis Garfield Williams, Corsyrhelig, Codrergraig, Clamorganshire, South Wales, England. Represented by A. Bursch, Berlin W. 8.

408,990 (December 12, 1923). Cellular pneumatic tire. Willy Pantzer, Vienna. Represented by J. Ingrisch, Barmen.

Design Patents Issued With Dates of Issue

890,715 (March 31, 1924). Anti-skid device for rubber tires. Heinz Salmon, Krüllstrasse 18, Berlin-Treptow.

892,065 (November 13, 1924). Footwear with rubber tread. Firma Theophil Just, Weesenstein i. S.

892,067 (November 13, 1924). Electric sponge rubber heating cushion. Willy Radsch, Jacobstrasse 18, Halle a. d. S.

892,091 (November 17, 1924). Navel rupture band. Uebersee-Gummiwerke A.-G., Wandsbek.

892,130 (October 22, 1924). Soft rubber bathing cap. E. Kübler & Co., G. m. b. H., Berlin-Reinickendorf-West.

892,296 (November 20, 1924). Rubber heel holder for footwear. Gustav Nicht, Bautzen i. S.

892,337 (October 31, 1924). Bath sponge bag of sponge rubber. Max Manfred v. d. Heyden, Helmstedterstrasse 17, Berlin-Wilmersdorf.

892,439 (November 6, 1924). Disinfected telephone cushion of sponge rubber. Uebersee Gummiwerke A.-G., Wandsbek.

892,465 (November 18, 1924). Sponge rubber bandage for Priessnitz compresses. William Sachs, Lessingstrasse 33, Berlin.

892,525 (September 6, 1924). Rubber gaiter. H. Fr. Müller and H. Markworth, Wolmirstedt.

892,527 (September 9, 1924). Bathing cap of rubber. Flügel & Polter, Leipzig-Plagwitz.

892,577 (November 18, 1924). Rust remover with handle. Hanowa Gummiwarenfabrik Z. m. b. H., Nowawes bei Potsdam.

892,672 (November 20, 1924). Operation cushion. Harburger Gummiwarenfabrik Phoenix A.-G., Harburg, a. d. Elbe.

892,751 (November 14, 1924). Ball with protruding leg. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.

892,765 (November 22, 1924). Rubber joker in the shape of a cat. Max Manfred v. d. Heyden, Helmstedterstrasse 17, Berlin-Wilmersdorf.

892,820 (July 10, 1924). Pneumatic tire. Richard Wackwitz, Torgau.

892,897 (November 26, 1924). Bathing cap. Hannoversche Gummiwerke Excelsior A.-G., Hannover-Limmer.

892,979 (November 25, 1924). Ball with two projecting legs. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.

893,038 (November 7, 1924). Rubber overshoe. Joaquin de Noronka, Schadowstrasse 35, Düsseldorf.

893,061 (November 25, 1924). Protective rubber gaiter. A.-G. Metzeler & Co., Munich.

893,075 (November 26, 1924). Sponge rubber binder for rheumatism in the shoulder and upper arm. Uebersee Gummiwerke A.-G., Wandsbek.

893,246 (November 12, 1924). Rubber door fastener. Julius Gläser, Bautznerstrasse 11, Dresden.

893,273 (November 26, 1924). Toy Easter egg of sponge rubber. Uebersee Gummiwerke A.-G., Wandsbek.

893,286 (November 29, 1924). Rubber joker in the shape of a caricatured head. Max Manfred v. d. Heyden, Helmstedterstrasse 17, Berlin-Wilmersdorf.

893,290 (December 1, 1924). Sanitary bandage. Paul Bloch, Grünstrasse 25-26, Berlin.

893,376 (November 28, 1924). Figure of colored, marbleized rubber. Max Manfred v. d. Heyden, Helmstedterstrasse 17, Berlin-Wilmersdorf.

893,384 (December 1, 1924). Automobile disk wheel of rubberized fabric. Continental Caoutchouc & Gutta Percha Compagnie, Hannover.

893,385 (December 1, 1924). Automobile disk wheel of rubberized fabric. Continental Caoutchouc & Gutta Percha Compagnie, Hannover.

893,389 (December 1, 1924). Sponge rubber ring for shaving brush. Ernst Winkel, Kaiserdamm 103-104, Charlottenburg.

893,411 (December 18, 1923). Detachable rubber sole for walking shoes. Elias Chahadi, Vienna. Represented by P. Theuerkorn, Chemnitz.

893,509 (June 24, 1924). Rubber heel and rubber sole with lower layer of sponge rubber. Leo Grossmann, Dorfstrasse 36, Berlin-Mariendorf.

893,661 (November 28, 1924). Temporary bandage for damaged bicycle-tire covers. Karl Ottmann, Sophienstrasse 53, Frankfurt-am-Main.

893,744 (November 15, 1924). Rubber tube conduction with spiral wrapping of edged wire. Felten & Guilleaume Carlswerk A.-G., Köln-Mülheim.

893,745 (November 15, 1924). Rubber tube conduction with cover of wire braid. Felton & Guilleaume Carlswerk A.-G., Köln-Mülheim.

893,746 (November 15, 1924). Rubber tube conduction with spiral wrapping of half-round wire. Felton & Guilleaume Carlswerk A.-G., Köln-Mülheim.

893,747 (November 15, 1924). Rubber tube conduction with spiral wrapping of round wire. Felten & Guilleaume Carlswerk. A.-G., Köln-Mülheim.

893,761 (November 26, 1924). Swimming cushion. Hannoversche Gummiwerke Excelsior A-G., Hannover-Limmer.

893,784 (December 2, 1924). Foot-rest. Pahlsche Gummi-und Asbest G. m. b. H., Düsseldorf-Rath.

893,791 (December 3, 1924). Rubber mat. Max Rupke, Ohligs, Rheinland.

893,836 (November 18, 1924). Solid rubber tire. S. Herz G. m. b. H., Berlin.

894,357 (November 20, 1924). Massaging apparatus with rubber ball for suction. Wilhelm Nöchel, Colmannskopp, South West Africa; represented by A. Spreer, Leipzig.

894,427 (November 5, 1924). Elastic material like rubber combined with hair. Ernst Fertig, Kanalstrasse 34, Munich.

894,434 (November 7, 1924). Sponge rubber mat for talking-machines Uebersee-Gummiwerke A.-G., Wandsbek.

894,467 (November 25, 1924). Rubber tire with steel band inserted. Hanna Ruess, née Bayer, Kaiserplatz 12, Augsburg.

Trade Marks

The United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the latter act trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

Granted January 20, 1925, Act of February 20, 1905

194,179 TRIMOL, the M being larger than the other letters, which are graded in size, the smaller being at the ends—rubber, cotton, and linen hose and belting; rubber packing and jar rings. J. W. Buckley Rubber Co., New York, N. Y.

194,199 KINESTHETIC—golf balls. Kinesthetic Process Co., Inc., Long Island City, New York.

194,200 A rectanguiar figure with apices of the angles at top and bottom, but with the sides extended to form flaps; enclosed by the figure is the word MEND-RITE, the letters graded so that the upper portion of MEND follows the upper angle and the lower portion of RITE follows the lower angle—fan belts, rubber and fabric patches, and blow-out patches. Knick's Mend-Rite Manufacturing Co., Kansas City, Missouri.

194,252 TRAUN'S—dental rubber. Atlantic Rubber Manufacturing Co., New York, N. Y.

194,259 B & O UNION GRIP, on a strip of material resembling twisted parts of a scroll—tire patches. Barnett & Owen, Oakland City, Indiana.

194,260 Representation of a child's head with an Indian headdress and the words WOODY WAUKUM surrounding it; the whole enclosed by a circular border—shoes of leather, rubber, fabric and combinations thereof. Edgar K. Woodrow, Cincinnati, Ohio.

194,308 The word GOODYEAR, with the representation of a winged foot separating the two syllables—paint for pneumatic and solid tires and rubber goods. The Goodyear Tire & Rubber Co., Akron, Ohio.

194,321 CA-SEL-CO.—rubber goods. Castle Rubber Co., East Palestine, Ohio.

194,353 HILCO, the words graded in size so that the smallest are on the ends, a small black triangular figure like an arrow tip preceding and following the lettering—automobile brake lining and clutch facing. R. J. Hill Brake Co., Philadelphia, Pennsylvania.

194,367 CUTLERITE—resilient leather, rubber, fibrous or composition soles for boots, shoes and slippers. Alfred Hale Rubber Co., Atlantic, Massachusetts.

Granted January 20, 1925, Act of March 19, 1920, Section 1(b)

194,386 THE LOOP TIRE—resilient tires and inner tubes of rubber or rubber and fabric. The Racine Horseshoe Tire Co., Racine, Wisconsin.

Granted January 27, 1925, Act of February 20, 1905

194,401 STYLE-ARCH, the words slightly arched and graded in size so that the largest letters are at the ends—shoes of leather, rubber, fabric, or combinations of these. Style-Arch Shoe Co., Cincinnati, Ohio.

194,466 TRU-GRIP, the letters slightly curved, and fluted at the top—shoes of leather, rubber, fabric or combinations. Maurice Wyman, Baltimore, Maryland.

194,467 The words ARCH HUG, one above and one below an arched line and following its curve—shoes of leather, rubber, fabric or combinations. Maurice Wyman, Baltimore, Maryland.

194,472 Representation of a hog, beneath which is the word RAZORBACK—clothing, including shoes of leather, rubber and fabric. Price Clothing Co., Fayetteville, Arkansas.

Granted February 3, 1925, Act of February 20, 1905

194,573 PARADISO—prophylactic rubber articles for prevention of contagious diseases. L. Hilsenbeck, New York, N. Y.

194,576 LINENITE—rubber linings for sleeves, conduits, and receptacles, and more particularly for ball, pebble and tool grinding mills. The B. F. Goodrich Co., New York, N. Y.

194,584 Within a diamond-shaped outline the letters: U C Co, the second letter being much larger than the others and disposed at the center of the figure. United Cycle Co., Bridgeport, Connecticut.

194,637 A Hackruled parallelogram within the upper portion of which is the inscription: OLD HICKORY TIRE PATCH—patching outfit for inner tubes, tires, rubber boots and shoes, etc. W. C. Boyles, Winston-Salem, North Carolina.

194,667 REGEX, the initial and last letters being extra large size and connected by an underscoring line—sanitary syringes. C. Regvio, Brooklyn, New York.

194,680 CARBOGEN—India rubber and partly prepared and reclaimed India rubber. Northwestern Kubber Co., Akron, Ohio, and Liverpool, England.

Granted February 3, 1925, Act of March 19, 1920, Section 1 (b)

194,711 WEAR-WELL—rubber tires and tubes. C. Kenyon Co., Inc., Brooklyn, New York.

Granted February 10, 1925, Act of February 20, 1905

194,768 HOLD-TITE—pneumatic tire casings. The Hold-Tite Tire & Rubber Co., Indianapolis, Indiana.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

The Dominion of Canada

37,014 LUSTRO—rubber clothing, coats, caps, boots and other rubber footwear. Ames Holden Tire & Rubber Co., Ltd., Kitchener, Ontario.

37,015 LUSTRO—rubber sheeting, tires, heels, air beds, cushions, aprons, tubing, cement, sponges and sundry other rubber articles. Ames Holden Tire & Rubber Co., Ltd., Kitchener, Ontario.

37,016 TRUCO—combs for the hair. Traun Rubber Co., Ltd., 57 Rathmines Road, Dublin, Ireland.

37,111 A red band running longitudinally of a belt—belting. Gutta Percha & Rubber, Ltd., Toronto, Ontario.

37,112 VUL-COLD-NIZE—liquid rubber and plastic rubber. Consolidated Rubber Co., Inc., Boston, Massachusetts, U. S. A.

The United Kingdom

Published January 14, 1925

B450,916 RUBESV—ink and pencil erasers. Eagle Pencil Co., New York, N. Y., U. S. A., and Ashley Road, Tottenham, London, N. 17.

452,331 GLAZITE—wire covered with rubber. The London Electric Wire Co., and Smiths, Ltd., 7 Playhouse Yard, Golden Lane, London, E. C. 1.

453,419 PUNCH—goods made entirely or principally of rubber and gutta percha, exclusively in Class 40. Martin & Son, 11 Scale Lane, Hull.

453,546 CAVEX—rubber heels, tips, soles and pads for boots and shoes. I. T. S. Rubber Co., Ltd., 42 Great Russell street, London, W. C. 1.

453,633 CAVEX—rubber heels, tips, soles and pads included in Class 37. I. T. S. Rubber Co., Ltd., 42 Great Russell street, London, W. C. 1.

Published January 21, 1925

452,908 Outline representation of a bear—golf clubs and golf club heads included in Class 49. The Leyland & Birmingham Rubber Co., Ltd., Golden Lane, Leyland, near Preston, Lancashire.

454,055 REPSOL—raw or partly prepared rubber. Crêpe Sole Rubber (Plantation Finished), Ltd., 13 Well street, London, E. C. 1.

454,056 REPSOL—rubber soles for boots and shoes. Crêpe Sole Rubber (Plantation Finished), Ltd., 13 Well street, London, E. C. 1.

454,213 CREPOL—raw or partly prepared rubber. Crêpe Sole Rubber (Plantation Finished), Ltd., 13 Well street, London, E. C. 1.

454,214 CREPOL—goods of rubber or gutta percha exclusively in Class 40. Crêpe Sole Rubber (Plantation Finished), Ltd., 13 Well street, London, E. C. 1.

Published January 28, 1925

453,969 "PALLADIUM"—air saddles for bicycles, air tubes for tires, inner tubes for tires, and pneumatic tires. Etablissements Palladium, 10 Rue du Colonel Moll, Paris, France.

454,299 BIDDY—rubber sheeting, in Class 40. Llewelyn Birchall Atkinson, Alster, Little Hampden Lane, Great Missenden, Buckinghamshire.

ENGLAND'S IMPORTATIONS OF AMERICAN-MADE RUBBER BELTING reached a value during the twelve months of 1924 of $212,879; hose, $240,675; and packing, $97,787. The corresponding figures for the entire year 1922 were $32,289, $223,003, and $46,052.

Designs

The United States

66,455 Tire. Term 7 years. J. B. Gabeline, Burlington, assignor to Standard Four Tire Co., Keokuk, both in Iowa.

66,464 Cigarette holder. Term 3½ years. J. Bradley, assignor of one half to C. E. Patterson, both of Oakland, California.

66,518 Pneumatic tire. Term 14 years. C. B. Raymond and V. Parker, both of Akron, Ohio, assignors to The B. F. Goodrich Co., New York, N. Y.

66,519 Cigarette holder. Term 14 years. A. A. Smith, Riverdale, and I. O. Gurnee, Butler, both in New Jersey, assignors to Superior Hard Rubber Co., Butler, New Jersey.

66,537 Tire. Term 14 years. A. Hargraves, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

66,540 India rubber bath glove in comical representation of a face and head. Term 3½ years. H. Lindemann, Hamburg, assignor to Uebersee Gummiwerke Aktien-Gesellschaft, Wandsbek, both in Germany.

66,541 India rubber bath glove in comical representation of a face and head. Term 3½ years. H. Lindemann, Hamburg, assignor to Uebersee Aktien-Gesellschaft, Wandsbek, both in Germany.

66,552 Rubber ball. Term 14 years. F. A. Cigol, Paterson, New Jersey, assignor to Paramount Rubber Consolidated, Inc., New York, N. Y.

66,572 Tire. Term 14 years. W. F. Love, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

66,593 Tire. Term 3½ years. J. B. Topham, Zelienople, Pennsylvania.

66,596 Solid tire. Term 14 years. H. Willshaw, assignor to Dunlop Tire & Rubber Corporation of America, both of Buffalo, New York.

The Dominion of Canada

6,496 Golf ball. Game Balls Co., Ltd., Windmill Road, Brentford, Middlesex, England.

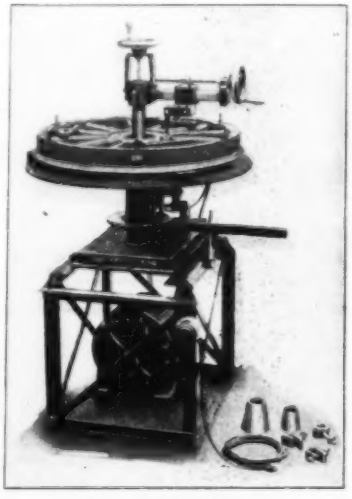
6,504 Golf ball. The Goodyear Tire & Rubber Co. of Canada, Ltd., Toronto, Ontario.

6,526 Rubber heel pad for boots and shoes. Phillips Rubbers, Ltd., 142-6 Old street, London, England.

WHEEL BORING MACHINE

The demand for a means to readily change over small diameter wooden wheels to accommodate balloon tires has been successfully met by the boring machine here illustrated.

The machine will take any size wheel for passenger cars, and truck wheels up to the 40-inch size. In one set-up the machine bores, faces and chamfers the wheel to fit the hub of any car. One of the outstanding advantages of the machine is the speed and accuracy with which it does the work of increasing the diameter of the bore and facing down the thickness of the wheel. A special self centering cone arrangement insures perfect accuracy in increasing the diameter of the bore of any wheel.



Herman Wheel Borer

The machine eliminates the necessity of carrying a large stock of wheels with various size bores and permits the dealer to carry fewer standard sizes in stock. Mounted on a cast iron stand the boring machine has a removable tool head which contains the boring, facing and chamfering tools. It weighs less than 200 pounds, is equipped with a three-quarter horsepower motor with belt and friction drive, or is furnished without the motor, for use with independent power.—The Herman Machine & Tool Co., Akron, Ohio.

"PNEUMATIC TIRES," BY HENRY C. PEARSON. AN ENCYCLOPEDIA of tire manufacture, repair, rebuilding, machinery and process.

The World's Rubber Position

By W. H. Rickinson & Son, London

The Stevenson restriction scheme after being in force has fulfilled one of its purposes in having removed the World's enormous surplus stocks of rubber. This has taken twenty-six months and during the period the average price of rubber has been around *1s. 2½d.* per pound. The next big step, and the final, is to gradually release rubber until consumption absorbs the full production. As far as can be judged at the present time, this will take quite as long as was required for the removal of the unnecessary stocks.

Despite the increase of output from the Dutch East Indies during 1924, estimated at 30,000 tons, the World's stocks have decreased by at least 60,000 tons. The Dutch increase during 1925 is estimated at 20,000 tons and the balance required will be obtained from British and other growers.

The following tabulations indicate the present and future crude rubber position.

Shipments and Consumption for 1924

SHIPMENTS

	Tons	Per Cent
British Malaya and Ceylon under restriction	209,477	49.8
Dutch East Indies	156,423	37.1
Other Plantations	25,320	6.0
Brazil	23,514	5.6
Wild (Africans, etc.)	6,096	1.5
Total	420,830	100.0

RETAINED BY COUNTRIES

	Tons	Per Cent
United States of America	320,637	76.2
United Kingdom (minus)	—11,110	—2.6
France	35,000	8.3
Germany	23,000	5.5
Italy	8,700	2.1
Canada	14,000	3.3
Japan	17,575	4.2
Rest	11,095	2.6
Balance, pending final official returns	1,943	0.4
Total	420,830	100.0

Estimate for 1925

AVAILABLE

	Tons	Per Cent
†British Malaya and Ceylon (maximum allowed)	233,688	46.4
Dutch East Indies	175,000	34.8
Other Plantations	27,000	5.3
Brazil	23,000	4.6
Wild (Africans, etc.)	6,000	1.2
*Probable deficit to be met out of stocks	38,812	7.7
Total	503,500	100.0

REQUIREMENTS

	Tons	Per Cent
United States of America	350,000	69.5
United Kingdom	25,000	5.0
France	37,000	7.3
Germany	29,000	5.7
Italy	9,500	1.9
Canada	15,000	3.0
Japan	20,000	4.0
Rest	18,000	3.6
Total	503,500	100.0

† Allowing for small holders the standard production for 1925 is 326,000 tons and a further 15,000 tons is permitted to be exported under "Special Allowance."

* The stock in England on January 1, 1925, was about 32,000 tons, and in the United States about 55,000 tons. These, of course, can be further reduced, but it would be a very narrow margin for the industry to work upon.

WORLD'S POTENTIAL PRODUCTION

With Standard Production Per cent	Total per Month Tons	Total per Year Tons
50	38,084	409,008
60	36,799	441,588
70	39,516	474,192
80	42,232	506,784
90	44,949	539,388
100	47,677	571,992
110	50,382	604,584†

†We estimate that about 600,000 tons would be the World's total production in 1926 were full tapping of the plantations to be permitted. This, however, is very improbable during 1926, in view of the unusually large increase in consumption which would be necessary.

MAXIMUM PRODUCTION 1925

With Rubber averaging *1s. 6d.* per lb. or over.

	With Standard Production Per Cent	World's Production: British Malaya and Ceylon Tons	World's Production: Dutch and all Other Tons	Total
January	50	14,834	19,250	34,084
February	55	16,191	19,250	35,441
March	55	16,191	19,250	35,441
April	55	16,191	19,250	35,441
May	65	18,908	19,250	38,158
June	65	18,908	12,250	38,158
July	65	18,908	19,250	38,158
August	75	21,625	19,250	40,875
September	75	21,625	19,250	40,875
October	75	21,625	19,250	40,875
November	85	24,341	19,250	43,591
December	85	24,341	19,250	43,591
Totals		233,688	231,000	464,688

Peters—Three Generations

IN THE treatment of fabrics with rubber for special purposes, as in the commoner branches of rubber goods manufacture, there are instances of sons and grandsons who have perpetuated and built up enterprises founded by their fathers and grandfathers in the early days of the American rubber industry.

Anthony Peters

Notable among them may be mentioned the Peters family, which for some five decades has been identified with the sale and for many years with the manufacture of shoe fabrics, adhesive tapes, backing cloths and inner soling. The present firm, known as the Peters Brothers Rubber Co., Inc., Brooklyn, New York, is the outgrowth of the business founded on High street, Boston, Massachusetts, half a century ago by the late Anthony Peters. The firm became Anthony Peters & Son when William F. Peters, Sr., attained his majority.

William F. Peters, Sr.

In the days of Anthony Peters, the balata-gutta percha tissue or film called "sheet rubber" by many, which was used in combining cloths and in the manufacture of backing cloths, was imported from Germany. Later, to avoid the tariff duty, the Germans built a factory near New York, N. Y. It was the ambition of William F. Peters, Sr., to make tissue manufacture a successful American industry. To it he devoted the best years of his life, and the company still enjoys the counsel of his long experience.

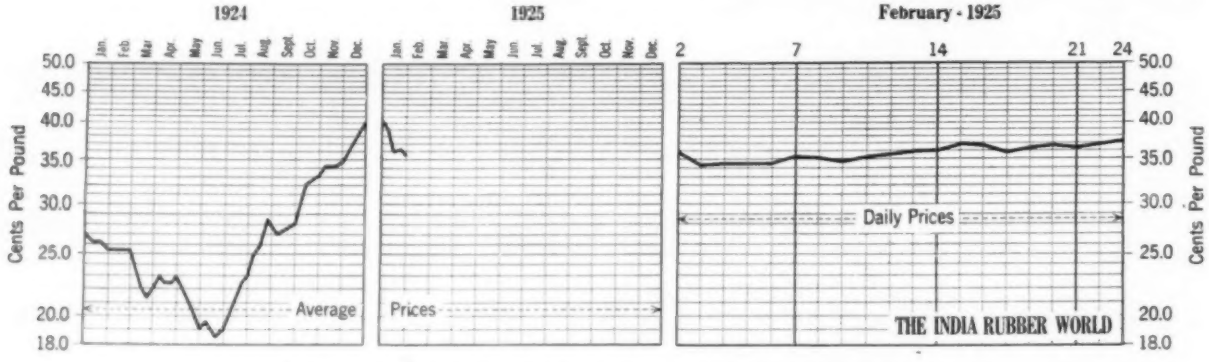
George L. and William F. Peters, Jr.

The business, which was incorporated in 1917 with a capital of $100,000, is now conducted by the sons of William F. Peters, Sr., George L. Peters and William F. Peters, Jr., both engineers and graduates of the School of Applied Science, Columbia University, who constitute the third generation of the Peters family, so long and favorably known in the shoe fabric trade. By specialization and achievement they have built up a successful business.

Owing to small volume in the adhesive backing cloth industry, machinery manufacturers devoted little thought to gutta percha machinery. At first the best available rubber machinery was tried, but had to be discarded as unsuitable. Determined to produce new things with new machinery and methods, the young engineers developed new processes and superior appliances of their own.

Today they manufacture a soft, tenacious backing cloth in one operation, as against the three operations formerly necessary, the great saving in labor being put into quality.

Late last year the firm removed from the Peters Building at 4109-4119 Park avenue, New York, N. Y., to a new factory in Brooklyn, N. Y. This latter building is a concrete and steel structure located at 160-168 John street, near one of the most important metropolitan freight terminals and at the ends of two bridges, and is completely equipped for the highly specialized line of manufacture in which the firm is engaged.



Ratio Graph of New York Closing Prices of Spot Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York

THE general course of spot prices during the month past was firm and upward. The advance from February 4 to the 24th was 2¾ cents. Supplies of spot and nearby rubber were short the entire month, with first latex crêpe ruling much of the time at ¾ to 1 cent or more over ribs. Thin, clean brown is absent from the market. February shipments from the Far East were late in arriving at New York. Up to the 25th of the month only 17,000 tons were landed as compared with 30,000 tons for the entire month last year. It is further reported that stocks in Singapore for March shipment total only 14,000 tons. These conditions make for firm and rising prices, which will still further rise in case of active factory buying. The small increase of the export allowance will scarcely be felt in relief of the market tension.

The week preceding February 1 was of much interest in anticipation of the announcement of the change in the exportable allowance for the next quarter, under the Stevenson plan. The official average price of rubber for the past quarter was 17.998 pence and the quota for export during February, March and April was set at 55 per cent of standard production, an increase of 5 per cent from the last quarter.

During the week ended February 1 market conditions were much mixed due to the uncertainties regarding the exportable allowance for the new quarter. Selling was quite active early in the week, terminating on Saturday with buyers and sellers wide apart. The next week the market opened very firm because of the 5 per cent increase and the firmness of the London and Singapore markets. Dealers and consumers withdrew from the market and prices eased off for lack of support; there was only a little trading. Spot crêpe, ambers, and thin, clean brown were all notably scarce.

Steady increase of price, featured the succeeding week, ended the 14th. Spot latex sold at ¾ to 1½ cents premium over ribs, owing to scarcity of the former. Interest on the part of consumers was largely absent. The week closed with prices reflecting the firmness in London and Singapore with small offerings of rubber being made in the primary markets.

Parás early in the month were steady and neglected, later becoming very dull, closing the month weaker but steady. Balatas and other grades were in much the same condition as Parás early in the month but closed in fair demand by the 21st.

Importations of all grades during January, 1925, were 29,960 tons, compared with 21,611 tons one year ago. Plantation arrivals for January were 28,480 tons, compared with 20,611 tons one year ago.

Spot and future quotations on standard plantation and Brazilian grades were as follows:

PLANTATION. February 2. Spot first latex crêpe, 36-36¼ cents; Feb.-Mar., 36-36¼ cents; Apr.-June, 36 cents; July-Sept., 35¼-36 cents.

February 24. Spot first latex crêpe, 37⅜-37⅝ cents; Feb.-Mar., 37⅝ cents; Apr.-June, 37¼ cents; July-Sept., 37 cents; Oct.-Dec., 35⅝ cents.

February 2. Spot ribbed smoked sheets, 35¾ cents; Feb.-Mar., 35¾ cents; Apr.-June, 35½-35¾ cents; July-Sept., 35¼-35⅜ cents.

February 24. Spot ribbed smoked sheets, 37⅛ cents; Feb.-Mar., 36¾ cents; Apr.-June, 36½ cents; July-Sept., 36 cents; Oct.-Dec., 35½ cents.

February 2. Spot No. 2 amber crêpe, 35¾ cents; Feb.-Mar., 35¾ cents; Apr.-June, 35½ cents; July-Sept., 35-35¼ cents.

February 24. Spot No. 2 amber crêpe, 36¼ cents; Feb.-Mar., 36¼ cents; Apr.-June, 36 cents; July-Sept., 35¾ cents.

February 2. Spot No. 1 rolled brown crêpe, 34½ cents; Feb.-Mar., 34½ cents; Apr.-June, 34¼ cents; July-Sept., 33¾-34 cents.

February 24. Spot No. 1 rolled brown crêpe, 34¾ cents; Feb.-Mar., 34¾ cents; Apr.-June, 34½ cents; July-Sept., 34¼ cents.

SOUTH AMERICAN PARAS AND CAUCHO. February 2, Spot, upriver fine, 33½ cents; islands fine, 29½ cents; upriver coarse, 26½ cents; Cametá, 17½ cents; caucho ball, 27½-28½ cents.

February 24. Spot, upriver fine, 32 cents; islands fine, 30 cents; upriver coarse, 26¾ cents; Cametá, 25½ cents; caucho ball, 25¼-27 cents.

New York Spot Closing Rubber Prices

PRICES IN CENTS, PER POUND

	January, 1925											February, 1925											
	19	20	21	22	23	24	26	27	28	29	30	31	2	3	4	5	6	7	9	10	11	*12	13	14
PLANTATIONS																								
Sheet																								
Ribbed smoked	34⅞	34⅛	35	35¼	36¼	36⅛	35⅛	35⅛	35⅛	35⅛	35	35⅞	35¼	34⅛	34½	34½	34½	35⅛	35⅛	34¾	35¼	....	35⅞	36
Crêpe																								
First latex	35⅛	34½	35⅛	35¾	36⅝	36⅜	35⅝	35⅜	35¾	36⅛	35⅜	36	36¼	34⅞	35	35	35⅛	36	36	35⅜	36⅛	....	36½	36⅝
Off latex	34⅛	34⅛	34⅜	35¼	36⅛	36	35¼	35	35⅜	35¾	35	35⅞	35⅞	34⅜	34⅜	34⅝	34⅝	35¼	35⅜	34⅞	35¼	....	36⅛	36⅛
No. 2 blanket	34⅝	34	34⅝	35	35⅞	35¾	35	34¾	34⅞	35¼	34½	35½	35⅜	34⅛	34⅛	34¾	34⅛	35	34¾	34½	34¾	....	35⅛	35½
No. 3 blanket	34½	33¾	34⅛	34¾	35⅝	35½	34¾	34½	34¾	35	34¼	35¼	35⅛	33⅞	33¾	34⅝	34	34¾	34½	34¼	34⅝	....	35⅛	35¾
No. 4 blanket	33¾	33⅛	34	34½	35¼	35⅛	34¾	34⅛	34¼	34¾	34	35	34¾	33½	33½	33¾	33¾	34½	34¼	34	34½	....	34⅞	34⅞
Thin, clean brown	34⅛	33¾	34⅜	34⅞	35¾	35⅝	34¾	34⅝	34⅞	35	34⅛	35⅜	35⅛	34	34⅛	34⅝	34⅝	34⅝	34¾	34½	34⅝	....	35¼	35¾
Specky brown	33⅞	33¾	34	34⅛	35⅛	35	34½	34	34½	34½	33⅝	34⅞	34⅝	33½	33¾	33¾	33⅝	34⅛	34½	33¾	34⅛	....	34¾	34¾
Rolled brown	33⅛	32⅝	33¼	33¾	34½	34⅛	33⅝	33½	33¾	34	33½	34½	34	33	33½	33¼	33¼	33⅞	33⅝	33½	33¾	....	34⅛	34¾

*Holiday.

London

In London, as in New York, the crude rubber market ruled firm and rising in February due to the strong statistical position of the commodity as to stocks, unrelieved by the allowance of 5 per cent increase in amount available for export in the new quarter. Suspicion of unfairness was entertained by those hoping for a larger allowance, because of the drop in London prices at the close of the last quarter, which dropped the average by 0.0017*d* below 18*s* and so made only 5 per cent increase possible. The reaction after the official announcement was immediate and steadily continued, the price advancing to 17 7/8 *d* and holding steady.

London stocks have continued to decline due to deliveries and have each week reached new low levels representing practically only three weeks' supply. The record of weekly stocks is as follows: January 27, 28,443 tons; February 3, 27,085 tons; February 10, 26,849 tons; February 17, 26,888 tons.

Singapore

Singapore market prices closely approximated those of London in response to restriction where the 5 per cent increase was regarded with some degree of disappointment. The market was firm and high, in which large local Chinese speculative operations were a factor especially on native sheets and blanket crêpe which are somewhat under their control.

In Singapore, London and New York crude rubber circles are anticipating good business at good prices for the current year.

New York Quotations

Following are the New York spot rubber quotations, for one year, one month ago, and February 24, the current date:

	February 25, 1924	January 27, 1925	February 24, 1925
Plantation Hevea			
Rubber latex (Hevea), *per gal.*	$1.30 @	$1.25 @1.35	$1.25 @
CREPE			
First latex	.26 @.26⅛	.36 @	.37⅜ @.37⅝
Off latex	.25⅝ @.25¾	.35¼ @	.37 @
Amber No. 2	.24½ @.24¾	†.35 @	.36¼ @
Amber No. 3	.24 @	.35 @	.36 @
Amber No. 4	@	†.35 @	.34¾ @
Brown, clean, thin	.24½ @	.35 @	.36⅛ @
Brown, specky	.24¼ @	.34 @	.35¾ @
Brown, roll	.24½ @	.34¼ @	.34¾ @
Sole crêpe	@	.47 @	.47 @.48
SHEET			
Smoked, ribbed	.25½ @.25¾	.35½ @	.37⅛ @
East Indian			
PONTIANAK			
Banjermassin	.07½ @.08	.08 @	.08¼ @
Palembang	.08½ @.08¾	@	@
Pressed block	.13½ @.14	.13¾ @	.14 @
Sarawak	.07½ @	@	.07¼ @
South American			
PARAS			
Upriver, fine	.20½ @	.33½ @	.32 @
Upriver, fine	*.30½ @	*.43 @	*.43½ @
Upriver, medium	.18 @	.30½ @	.30½ @
Upriver, coarse	.17¼ @	.26½ @	.26¼ @
Upriver, coarse	*.27¾ @	*.40 @	*.36¾ @
Islands, fine	.18 @	.30½ @	.30 @
Islands, medium	†.12 @	.27½ @	.28 @
Islands, coarse	†.11 @	.25 @	.25½ @
Cametá	.11 @.11½	.25½ @	.25½ @
Acre Bolivian, fine	.20½ @.21	.34 @	.32 @
Acre Bolivian, fine	*.30½ @	*.44 @	*.43¾ @
Beni Bolivian	.20½ @	.34¼ @	.32¼ @
Madeira, fine	.21¼ @	.34¼ @	.33 @
Peruvian, fine	.19 @	.33¼ @	.30 @
Tapajos, fine	.19 @.19½	.33 @	.31 @
CAUCHO			
Upper caucho ball	.19½ @	.27 @	.27 @
Upper caucho ball	*.28½ @	*.40 @	*.36¾ @
Lower caucho ball	.18½ @	.26 @	.25½ @
South American			
Maniçobas			
Ceará negro heads	.20 @	†.24 @	.24 @
Ceará scrap	.08 @	†.14 @	.10 @
Maniçoba 30% guaranty	.18 @	†.26 @	.26 @
Mangabeira, thin sheet	.23 @	†.29 @	.27 @
Centrals			
Central scrap	@	.25 @	.25 @
Central wet sheet	.15 @	.22 @	@
Corinto scrap	.17 @.17¼	.25 @	.26½ @
Esmeralda sausage	@	.25 @	.26 @
Guayule washed and dried	.24 @	.30 @	.32 @
Africans			
Benguela, No. 2, 32½%	.12 @	†.18 @	@
Congo prime, black upper	.19 @	†.27 @.28	@
Congo prime, red upper	.20 @	†.26 @.27	@
Kassai, black	.19 @	†.27 @.28	.24@
Kassai, red	.20 @	†.26 @.27	.24@
Gutta Percha			
Gutta Siak	.17¼ @.18	.18 @	.18¼ @
Gutta Soh	.29 @	.27 @	.28 @
Red Macassar	2.90 @3.00	2.80 @	3.25 @
Balata			
Block, Ciudad Bolivar	.67 @.68	.63½ @	.61½ @
Colombia	.54 @.56	.53 @	.50½ @
Panama	.54 @.55	.53 @	.50½ @
Surinam, sheet	.72 @	.76½ @	.77 @
amber	.75 @	.80 @	@
Chicle			
Honduras	.64 @.65	‡.58 @.68	.58 @.68
Yucatan, fine	.67 @	‡.58 @.68	.58 @.68

*Washed and dried crêpe. Shipment from Brazil.
†Nominal.
‡Duty paid.

Comparative Low and High New York Spot Rubber Prices

	February 1925*	February 1924	February 1923
PLANTATIONS			
First latex crêpe	$0.34¼ @ $0.38	$0.25 @ $0.26½	$0.33½ @ $0.35¼
Smoked sheet, ribbed	.34⅜ @ .37	.25 @ .26	.33½ @ .35¼
PARAS			
Upriver, fine	.31½ @ .33¼	.19¾ @ .20¾	.33 @ .36
Upriver, coarse	.25¾ @ .26¾	.17 @ .17¼	.25 @ .28
Islands, fine	.28¾ @ .29½	.18½ @ .18¾	.30 @ .32
Islands, coarse	.....	.11 @ .11¼	.16 @ .25
Cametá	.16½ @ .17½	.11 @ .11½	.14 @ .18

*Figured to February 24, 1925.

THIRTY-THREE MILLION COTTON SPINDLES OPERATING

The Department of Commerce announces that according to preliminary figures 37,866,066 cotton spinning spindles were in place in the United States on January 31, 1925, of which 33,180,758 were operated at some time during the month, compared with 32,661,949 for December, 31,789,876 for November, 31,078,804 for October, 30,122,384 for September, 28,945,603 for August and 33,279,926 for January, 1924.

The aggregate number of active spindle hours reported for the month was 8,493,240,466. During January the normal time of operation was 26½ days (allowance being made for the observance of New Year's Day in some localities) compared with 26 days for December, 24½ days for November, 26¾ for October, 25½ for September, and 26 for August. Based on an activity of 8.78 hours per day, the average number of spindles operated during January was 36,503,376 or at 96.4 per cent capacity on a single shift basis. This percentage compares with 90.4 for December, 87.5 for November, 85.4 for October, 76.1 for September, 62.8 for August, and 95.5 for January, 1924. The average number of active spindle hours per spindle in place for the month was 224.

DURING THE TWELVE MONTHS OF 1924 CANADA IMPORTED American-made rubber belting to the value of $163,199; hose, at $123,926; and packing, $99,665. The corresponding totals for the entire year 1922 were: belting, $122,672; hose, $132,916; and packing, $59,276.

REPLETE WITH INFORMATION FOR RUBBER MANUFACTURERS—H. C. Pearson's "Crude Rubber and Compounding Ingredients."

Reclaimed Rubber

The demand for reclaims continues in large and steady volume with outlook favorable for a year of good business. Most reclaiming plants are operating approximately at capacity, largely on orders taken last fall and early winter for spring delivery. New business in February has been quiet.

The consumption for reclaims for mechanicals, hose, heels, and flooring is rising in tonnage, influenced somewhat by the upward trend of crude rubber but more largely by the favorable volume cost showing at the prevailing prices of reclaims, the market list of which is quoted unchanged at the figures of a month ago.

New York Quotations

February 24, 1925

Auto Tire		
Black	lb.	$0.08¾@$0.09
Black, washed	lb.	.10¼@ .10¾
Dark gray	lb.	.09¾@ .10
Light gray	lb.	.11½@ .12
White	lb.	.14½@ .15
High Tensile Black		
Super-reclaim, No. 1	lb.	.17 @ .17¼
No. 2	lb.	.12 @ .13
Shoe		
Unwashed	lb.	.09 @ .09½
Washed	lb.	.12½@ .12¾
Tube		
No. 1	lb.	.14½@ .15½
No. 2	lb.	.11½@ .12½
Uncured Tire Friction		
No. 1	lb.	.27 @ .30
No. 2	lb.	.22 @ .24
Miscellaneous		
High grade, red	lb.	.14 @ .14¼
Truck tire	lb.	.09 @ .09½
Mechanical blends	lb.	.06¼@ .07

ELECTRIC TIRE REPAIRING

Balloon and pneumatic truck tires present an unusual repair problem, due to their size and weight. The electrical equipment here pictured dispenses with molds, and the curing heat is applied electrically only to the new materials used in the repair. The whole field of pneumatic repairing is covered by this apparatus.

Burke Electric Repair Equipment

The repair is built up as usual except the last ply. In the case of a sectional repair, for the last or innermost ply a wired fabric is used. The wires lie on the surface of the fabric next to the air bag, in a skim coat of cushion gum. After the repair is cured by passage of the electric current through these wires they are removed by a quick, simple operation, leaving the inside tire surface clean and smooth.

On outside repairs the usual stocks are used, but a piece of wired tread gum, just large enough to cover the repair, is applied on the surface. The wire in the tread is not removed after curing but remains in the tire. It is very soft and flexible and has no effect on the resiliency or wearing quality, nor is it visible.—The Electric Vulcanizing Rubber Co., Cleveland, Ohio.

"PNEUMATIC TIRES," BY HENRY C. PEARSON. AN ENCYCLOPEDIA of tire manufacture, repair, rebuilding, machinery and processes.

The Market for Rubber Scrap

The market for rubber scrap for the past two months has been decidedly quiet as dealers and reclaimers have been staying out. The latter have been operating on their reserve stocks and are awaiting more activity of demand for reclaims on the part of rubber manufacturers.

Rubber scrap prices have not changed materially from those of a month ago although the outlook is hopeful in view of the upward trend noted in spot crude rubber.

BOOTS AND SHOES. There has been practically nothing doing in boots and shoes with reclaimers aside from a few orders at from ⅛ to ¼ cent a pound under the nominal prices.

INNER TUBES. Mixed tubes are inactive at lower prices than a month ago. Domestic and export demand seems, for the time, non-existent.

MIXED TIRES. Tires are very quiet. Most orders on white, black and solid tires have been filled at bottom prices. Dealers have been at a loss what to bid in many cases.

AIR BRAKE AND MECHANICAL SCRAPS. Interest is absent on both these grades. Prices are nominal.

Consumers' Quotations for Carload Lots Delivered

February 24, 1925

Boots and Shoes		
Boots and shoes, black	lb.	$0.02¾@$0.02½
Trimmed arctics, black	lb.	.01⅞@ .02
Red and white	lb.	.01 @ .01¼
Untrimmed arctics	lb.	.01¼@ .01⅜
Hard Rubber		
Battery jars, black compound	lb.	.01 @ —
No. 1 scrap	lb.	.05 @ .06
Inner Tubes		
No. 1 floating	lb.	.06¾@ .06½
No. 2 compounded	lb.	.04 @ .04¼
Red	lb.	.03¼@ .03½
Mechanicals		
Black scrap, mixed	lb.	.01½@ .01¾
Heels	lb.	.00¾@ —
Horseshoe pads	lb.	.01 @ —
Hose, air brake	ton	20.00 @22.00
regular	ton	17.00 @20.00
Red, scrap, mixed	lb.	.02 @ —
White, scrap, mixed	lb.	.02 @ —
Tires		
PNEUMATIC		
Auto peelings	ton	50.00 @60.00
Bicycle	ton	12.00 @15.00
Standard white auto, with beads	ton	30.00 @35.00
Mixed auto, with beads	ton	18.00 @20.00
SOLID		
Carriage	ton	25.00 @27.00
Truck, clean	ton	38.00 @40.00

British Malaya

Rubber Exports

An official cablegram from Singapore to the Malay States Information Agency states that the amount of rubber exported from British Malaya during the month of January, 1925, was 19,183 tons. The amount of rubber imported was 10,132 tons, of which 7,577 tons were declared as wet rubber.

The following are comparative statistics:

	1924		1925	
	Gross Exports, Tons	Foreign Imports, Tons	Gross Exports, Tons	Foreign Imports, Tons
January	23,844	8,867	19,183	10,132

Distribution

DESTINATION	December, 1924 Tons	January, 1925 Tons
United Kingdom	2,341	1,435
U. S. A.	18,338	14,807
Continent of Europe	2,397	1,904
British Possessions	314	421
Japan	763	611
Other Foreign Countries	51	5
Totals	24,204	19,183

The Market for Chemicals and Compounding Ingredients

New York

THE active movement of the principal rubber compounding ingredients into manufacturing channels continued steadily and in large volume for six weeks after the opening of the year. About the middle of February a moderate lessening of demand was experienced in the form of requests for short postponements of deliveries on contract stocks. This feature is considered as indicating merely local and temporary conditions.

ACCELERATORS. The well established accelerators are moving in good volume and their use has become indispensable in all lines of rubber goods. The tendency to use the more rapid and active accelerators to attain high tensile properties is extending steadily as rubber manufacturers gain practical experience and skill in their use.

BENZOL. Stocks are reported as fair in amount, prices moderate and consuming demand steady and satisfactory.

CARBON BLACK. Many rubber manufacturers having covered their requirements for the first quarter year, carbon black prices advanced ½ cent a pound a month ago and demand has become less active. Nine carbon black companies operating in the Monroe field of Louisiana have combined into one organization with capital resources estimated at $15,000,000. The result is a stiffening of values as indicated by the advance mentioned.

CLAY. This is the rainy period in the clay mining sections of the South, therefore the pits cannot be worked, nor sun-drying of the ground product be carried on. The active call for clay is consequently supplied from stocks above ground, artificially dried. The temporary shortage which results is making business very active for clay producers with such stocks and drying facilities.

LITHARGE. Owing to a drop in pig lead in January, litharge was reduced ½ cent a pound early in February. So far this year litharge has been moving steadily into manufacturing activities.

SOLVENT NAPHTHA. Stocks are of fair volume, but with the majority of producers sold ahead the surplus is small and the market in a firmer position than before. Prices are, therefore, well maintained in all quarters.

WHITING. Both natural and artificial grades are in routine movement at very low prices.

Accelerators, Inorganic

Lead, carbonate	lb.	$0.11½	@
Lead, red	lb.	.13¼	@
sublimed blue	lb.	.11	@
sublimed white	lb.	.11	@
Lime, flour	lb.		@
R. M. (factory)	lb.	.01¼	@
R. M. hydrated	ton	15.00	@$35.00
superfine	lb.	.01½	@ 0.02
Litharge	lb.	.12¾	@ .13½
Magnesia, carbonate	lb.	.07¾	@
calcined, light (bbls.)	lb.	.24	@ .45
calcined, ex. light (bbls.)	lb.	.40	@
calcined, md. light (bbls.)	lb.	.15	@
calcined, heavy (bbls.)	lb.	.04½	@ .06
magnesium, carbonate, light,	lb.	.07	@ .07⅛
Orange mineral A.A.A	lb.	.16½	@
Rubber lead	lb.	.11	@

Accelerators, Organic

A-7	lb.	.75	@ .85
A-19	lb.	.85	@ .95
Accelemal	lb.	.30	@
Aldehyde ammonia powder	lb.	.95	@
Anhydro formaldehyde aniline	lb.	.38	@
Anhydroformaldehyde-para-toluidine	lb.	1.11	@
Aniline (factory)	lb.	.17	@
sulphate	lb.		@
Benzidine (base)	lb.	.76	@
Cryline	lb.	.60	@
paste	lb.	.60	@
powder	lb.	.35	@
Dimethylaniline	lb.	.35	@
Di-ortho-tolylguanidine	lb.	1.26	@
Di-ortho-tolythiourea	lb.	.32	@
Diphenyl guanidine	lb.	1.10	@ 1.20
Ethylidene aniline	lb.	.75	@
Excellerex	lb.	.40	@ .45
Formaldehyde aniline	lb.	.42½	@
Heptene	lb.	1.50	@
Hexamethylene tetramine	lb.	.85	@
Lead oleate (fac'ty)	lb.	.16	@
Methylene aniline	lb.	.32	@ .40
Methylenedianilide	lb.	.40	@
No. 999	lb.	.18½	@
Shawinigan paraldehyde	lb.	.17	@ .19
Para-nitrosodimethylaniline	lb.	.99	@
Paraphenylene diamine	lb.	1.30	@ 1.40
Quinodine	lb.	.40	@
Super-sulphur, No. 1	lb.	.50	@
No. 2	lb.	.20	@ .30
Tensilac No. 39	lb.	.80	@
No. 40	lb.	.75	@
Thiocarbanilide	lb.	.25	@ .31
Trimene	lb.	.75	@
Trimene base	lb.	1.40	@
Triphenylguanidine	lb.	.70	@ .75
Tuads	lb.	4.50	@ 6.00
Vulcone	lb.	.89	@

Acids

Acetic 28% (bbls.)	lb.	.04	@
glacial (carboys)	lb.	.16	@
Cresylic (95% straw color)	gal.	.62	@ .65
(95% dark)	gal.	.58	@ .61
Sulphuric, 66° (carboys)	lb.	.03	@

New York Quotations

February 24, 1925.

Alkalies

Caustic soda	100 lbs.	$3.10	@$3.76
flake, 76% (factory)	100 lbs.	3.60	@ 4.31
solid, 76% (factory)	100 lbs.	3.20	@ 3.91

Colors

BLACK

Bone	lb.	.07	@ .09½
Carbon	lb.		@
Aerfloted arrow	lb.	.06	@ .10
compressed	lb.	.06½	@ .11
Micronex	lb.	.07	@ .12
uncompressed	lb.	.06	@ .10
Charcoal (pow'd)	lb.	.05	@ .09
Drop	lb.	.08	@ .09
Ivory black	lb.	.12	@ .30
Lampblack	lb.	.10	@ .15
A. & W. nonfli	lb.	.40	@
Shawinigan	lb.	.12	@ .14
Thermatomic carbon (factory)	lb.	.04	@

BLUE

Cobalt	lb.	.21	@ .26
A. & W. blue	lb.	2.00	@ 4.00
Prussian	lb.	.40	@ .50
Ultramarine	lb.	.10	@ .35

BROWN

Iron oxide	lb.	.04½	@ .05½
Sienna, Italian	lb.	.05½	@ .06½
Umber, Turkey	lb.	.04½	@ .05

GREEN

Chrome, light	lb.	.29	@ .31
medium	lb.	.30	@ .32
dark	lb.	.31	@ .34
commercial	lb.	.10	@ .10½
tile	lb.	.13	@ .15
A. & W. green	lb.	2.00	@ 3.00
Oxide of chromium	lb.	.41	@ .51
T. K.	lb.	.40	@ .45

RED

Antimony, golden	lb.	.20	@
golden T. K.	lb.	.18	@ .22
golden R.M.P. No. 7	lb.	.20	@
golden pentasulphide, T. K.	lb.	.33	@ .35
golden, 15/17% G. E.	lb.	.15	@ .18
golden, 15/17% F. S.	lb.	.18	@
golden, No. 1	lb.	.30	@
golden, No. 2	lb.	.20	@
Antimony, crimson	lb.	.42	@ .45
crimson T. K.	lb.	.45	@ .50
crimson, 15/17% G. E.	lb.	.45	@ .50
crimson, 15/17% F. S.	lb.	.39	@
crimson, R.M.P. No. 3	lb.	.50	@
crimson F.	lb.	.45	@
7-A	lb.	.35	@
Z-2	lb.	.20	@
Vermilion, 5% F. S.	lb.	.65	@

RED—Continued

Antimony

Vermilion 15/17% F.S.	lb.	$0.50	@
Arsenic, red-sulphide	lb.		@
A. & W. red (4 shades)	lb.	1.50	@ 3.00
purple	lb.	2.00	@ 3.00

Iron oxides

domestic	lb.	.12	@
English	lb.	.11½	@
English Indian	lb.	.09	@ .13
Indian, pure	lb.	.05	@ .13
pure bright	lb.	.11	@ .14
reduced	lb.	.07	@ .11
Spanish	lb.	.02½	@ .04
Levigated, waterfloated	lb.	.02¾	@
Venetian	lb.	.02	@ .05½
Oximony	lb.	.13½	@
Pará toner	lb.	.90	@ 1.00
Toluidine toner	lb.	1.95	@ 2.25
Vermilion, English	lb.	1.35	@ 1.60

WHITE

Akcolith	lb.		@
Albalith	lb.	.06¾	@ .06⅝
Aluminum bronze	lb.	.60	@ 1.25
Lithopone	lb.	.06	@
Sterling	lb.	.06¾	@ .06⅝
Azolith	lb.	.06⅛	@ .06⅜
Imported prime	lb.	.06½	@ .07
Red seal, imported	lb.		@
T. O. pigment	lb.	.15	@ .17
Zinc oxide			
AAA, lead free	lb.	.08	@ .08¼
Azo (factory):			
ZZZ (lead free)	lb.	.07¾	@ .08¼
ZZ (5% leaded)	lb.	.06⅞	@ .07⅛
Z (8.10% leaded)	lb.	.06⅞	@ .07⅛
French process, Florence brand			
Green seal	lb.	.10⅞	@ .11⅛
Red seal	lb.	.09⅞	@ .10⅛
U. S. P.	lb.	.15⅞	@ .17⅛
White seal	lb.	.11⅞	@ .12⅛
Horse Head brands			
Selected	lb.	.08½	@ .08¾
Special	lb.	.08½	@ .08¾
XX red	lb.	.08	@ .08¼
Leaded brands			
Lehigh	lb.	.07⅛	@ .07¾
Standard	lb.	.07⅛	@ .07¾
Sterling	lb.	.07⅛	@ .07¾
Superior	lb.	.07⅛	@ .07¾
Palmerton process			
Kadox, black	lb.	.10⅞	@ .11¼
blue	lb.	.09⅞	@ .10¼
red	lb.	.08⅞	@ .09¼
Snow white	lb.		@

YELLOW

Arsenic	lb.	.65	@ .75
Chrome	lb.	.18	@ .21
A. & W. yellow	lb.	2.50	@ 4.00
India rubber	lb.	.75	@
Ochre, domestic	lb.	.03	@ .03½
imported	lb.	.02	@ .02½

Compounding Ingredients

Aluminum flake (sacks C.L.)	ton	$21.85	@
(sacks L. C. L.)	ton	24.50	@
Ammonia carbonate	lb.	.12	@ .12½
Asbestine	ton	13.00	@25.00
Aluminum silicate	ton	25.00	@27.00
Barium, carbonate (bbl.)	ton	53.00	@54.00
dust	lb.	.05	@
Barytes, imported white	ton	32.00	@35.00
pure white	ton	30.00	@35.00
O.C.X., off color	ton		@
water ground and floated	ton	23.00	@26.00
Basofor	lb.	.04½	@
Blanc fixe	lb.	.04	@ .04½
Carrara filler (factory)	lb.	.01½	@ .02
Chalk, precip. extra light	lb.	.04½	@ .05
heavy (f.o.b. factory)	lb.	.03½	@ .04
Clay, Dixie	ton	20.00	@35.00
Blue ribbon (C. L. facty.)	ton	14.00	@
Blue Ridge	ton	12.00	@24.00
Catalpo (facty.)	ton	38.00	@40.00
China	lb.	.01½	@
China, L. H. B.	ton	13.00	@22.50
English, L. H. B.	lb.	.02½	@ .02¾
Langford	ton	12.00	@22.00
Cotton flock, black	lb.		@
light-colored	lb.		@
white	lb.		@
Cotton linters clean mill-run	lb.	.04½	@
Fossil flour (powdered)	ton		@
(bolted)	ton		@
Glue, high grade	lb.	.21	@ .29
medium	lb.	.19	@ .25
low grade	lb.	.14	@ .18
Graphite, flake	lb.	.06½	@ .12
Infusorial earth (pow'd)	lb.	.03½	@
(bolted)	ton		@
Lime (bolted)	lb.	.01½	@ .02
Mica, amber	lb.	.05	@
powdered	lb.		@
white	lb.		@
Pumice stone, powd.	lb.	.03	@ .05
Rotten stone (bbls.)	lb.	.02½	@ .04½
Slate flour (facty.)	ton	8.50	@15.00
Soap bark, cut	lb.	.09½	@ .10
Soapstone	ton	15.00	@22.00
Sodium bicarbonate (bbls.)	100 lbs.	1.75	@
Starch, powd. corn			
Buffalo (bbls.)	100 lbs	4.34	@ 4.44
(bags)	100 lbs.	4.07	@ 4.17
Talc, soapstone	ton	15.00	@22.00
Terra blanche	ton	23.00	@25.00
Whiting, domestic No. 33	ton	10.00	@
chalk, L. H. B.	ton	16.00	@25.00
commercial (facty.)	100 lbs.	.90	@ 1.00
English, imported	lb.	.01¼	@
English, cliffstone (factory)	100 lbs.	1.50	@ 2.00
Georgia calcite	ton		@
gilders (bolted)	100 lbs.	1.25	@ 1.35
Nelco	ton	11.00	@22.50

Chemical Market—*Continued*

New York Quotations

February 24, 1925.

Perfection	ton	$13.00	@$15.00
Quaker	ton	13.00	@15.00
Snowflake white	ton		@
Superfine	ton		@
Sussex	ton	8.00	@10.00
Witco (C. L.)	ton	12.00	@
York	ton	8.00	@
Wood pulp, XXX (facty.)	ton	35.00	@
X (facty.)	ton	25.00	@

Mineral Rubber

Genasco (facty.)	ton	50.00	@52.00
Gilsonite	ton		@
Granulated M. R.	ton	35.00	@45.00
Hydrocarbon, hard	ton	29.00	@35.00
Hydrocarbon, soft	ton	29.00	@35.00
Mineral Flour	ton	17.00	@
Ohmlac Kapak, K-R	ton	30.00	@60.00
K-4	ton	175.00	@
320/340 m. p. hydrocarbon	ton	47.00	@52.00
300/310 m. p. hydrocarbon	ton	42.00	@47.00
Pioneer, M. R., solid (fac.)	ton	42.00	@44.00
M. R. granular	ton	52.00	@54.00
Robertson, M. R., solid, (facty.)	ton	35.00	@75.00
M. R. (gran. facty.)	ton	42.00	@80.00
Paradura	ton	60.00	@62.50
Rubrax (facty.)	ton	60.00	@
Synpro, gran. M. R. (facty.)	ton		@

Resins and Pitches

Tar, pine, retort	bbl.	13.50	@14.00
kiln	bbl.	13.50	@15.00
Pitch, Burgundy	lb.	.06	@
coal tar	ton	30.00	@
Fluxol hardwood	lb.	.02	@ .04
pine tar	bbl.	6.50	@
ponto	bbl.	6.50	@
Rosin, K (bbl.) 280 lbs.		8.75	@
strained (bbl.) 280 lbs.		8.60	@
Shellac, fine orange	lb.	.63	@ .64
substitute	gal.	1.50	@
Peanut, crude	lb.	.13	@
refined	lb.	.15	@
Petrolatum, standard	lb.	.06	@ .08
Petrolatum, sticky	lb.	.08	@ .10
Pine, steam distilled	gal.	.68	@ .72
Rapeseed, refined	gal.	1.05	@
blown	gal.	1.15	@
Rosin	gal.	.49	@ .50
Soya bean	lb.	.13½	@
Tar	gal.	.28	@ .33
Woburn	lb.	.05	@

Oils (Softeners)

Avoilas compound	lb.	.12	@ .13
Castor, No. 1, U. S. P.	lb.	.17½	@
No. 3, U. S. P.	lb.	.17	@
Corn, crude (bbls.)	lb.	.13	@
Cotton, Summer yellow	lb.	.12	@

Oils (Softeners)—*Continued*

Cycline	gal.	.34	@ .38
Glycerine	lb.	.19	@ .19½
Linseed, raw	gal.	1.20	@
Liquid rubber	lb.	.11	@
Palm lagos	lb.	.12	@
clarified	lb.	.09½	@ .10
Palm, niger	lb.	.11½	@
Parra M. R. flux	lb.	.06	@ .07

Solvents

Acetone (98.99%, [6.62 lbs. gal.])	lb.	.10	@ .11
Benzol (90%, 7.21 lbs. gal.) pure	gal.	.23	@ .28
Carbon bisulphide (10.81 lbs. gal.)	lb.	.06½	@ .07½
tetrachloride (13.28 lbs. gal.)	lb.	.06¾	@ .07½
Gasoline			
No. 303			
Tankcars	gal.	.22½	@
Drums, C. L.	gal.	.25½	@
Drums, L. C. L.	gal.	.28½	@
Motor gas (steel bbls.)	gal.	.21	@
Naphtha, V. M. & P.	gal.	.20½	@
68° Bé., 122°, 324°	gal.	.19	@
70° Bé., 114°, 314°	gal.	.20	@
71° Bé., 112°, 304°	gal.	.21	@
Turpentine, spirits	gal.	.96½	@
wood, steam distilled	gal.	.86	@

Substitutes

Black	lb.	.08	@ .14
Brown	lb.	.10	@ .14
White	lb.	.08½	@ .15
Brown factice	lb.	.09	@ .18½
White factice	lb.	.09	@ .16

Vulcanizing Ingredients

Black hypo	lb.	.18	@
13% F. S.	lb.	.20	@
Sulphur chloride (drums)	lb.	.04½	@ .05
Sulphur, Bergenport brand, 100% pure (C.L.) 100 lbs.		2.35	@ 2.60
(L.C.L.) 100 lbs.		2.65	@ 2.90
Sulphur, Brooklyn brands			
Refined velvet (bbls.) 100 lbs.		2.60	@ 3.15
(bags) 100 lbs.		2.35	@ 2.90
Superfine flour (bbls.) 100 lbs.		2.40	@ 2.90
(bags) 100 lbs.		2.00	@ 2.50
Rubber makers 100 lbs.		3.25	@ 3.50

(See also Colors—Antimony)

Waxes

Wax, beeswax, white, com	lb.	.55	@ .65
ceresine, white	lb.	.10	@ .11
carnauba	lb.	.24½	@ .25
montan	lb.	.06	@ .06½
ozokerite, black	lb.	.24	@ .25
green	lb.	.25	@ .30

Paraffin

122/124 white crude scale	lb.	.06	@
124/126 white crude scale	lb.	.06½	@
120/122 fully refined	lb.	.06¾	@
125/127 fully refined	lb.	.06½	@

INNER TUBE STEAM SPLICING CEMENTS

Steam splicing of inner tubes has recently been perfected on a quick cure production basis. It is essential in this work that the cement should be quick curing at low steam pressures, without darkening the tube, that it should be approximately the color of the tube; easily made up and absolutely uniform; possess good aging properties. These requirements are met by using one of the more easily handled ultra-accelerators.

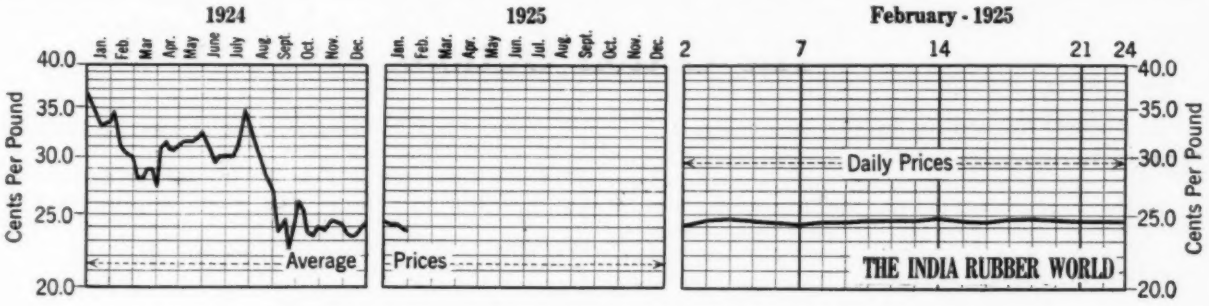
While it is not essential to prepare the cement mixing in two part batches, by doing so the cement may be allowed to stand indefinitely. This advantage has led to the general use of the split batch practice, in which one portion contains the sulphur and the other the ultra-accelerator. Ultra-accelerators may be obtained that mix easily and uniformly in the rubber. Their special advantage is their rapid effect at low temperatures.

In curing inner tube splices, outside steam pressures of 40 to 60 pounds are used; however, the actual temperature reached by the cement in the joint is much below the external temperature, due to the fact that rubber is a very poor conductor of heat. In fact, under the conditions named the temperature of the splice probably does not much exceed that of 212 degrees F. Nevertheless, under such conditions the proper ultra-accelerator will give a perfect cure in from 2 to 5 minutes, with an external steam pressure of 40 to 60 pounds.

Some bright colored tubes will discolor when exposed to the heat of steam from 40 to 60 pounds. In such cases a low temperature accelerator may be used that will react in the splice, without sacrificing the quick cure, using the external heat of 35 to 40 pounds.

When ultra-accelerators are used any desired color may be given the cement and the most delicate tints will not darken in the cure. The perfect aging qualities of these accelerators have been fully demonstrated over several years of practical use.

DURING SEPTEMBER, 1924, ENGLAND LED OTHER COUNTRIES IN the value of purchases of American-made rubber boots and shoes, taking of the former class of goods 50,653 pairs, value $192,892, and of the latter 99,173 pairs, value $66,996. It should be noted that Austria also during September bought 102,467 pairs of such shoes, value $55,351. England also continued to lead during the two months following, taking in October, 34,708 pairs of boots, value $76,412, and 31,480 pairs of shoes, value $22,255. The November purchase rose to 54,459 pairs of boots, value $103,255, and 62,574 pairs of shoes, value $37,860.



Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. Southern mills are reported doing a fair business but the hand-to-mouth policy which has characterized the trade for a long time is being continued. Early in February a decidedly more active demand was reported in the leading markets. The shortage of winter rainfall in Texas and Oklahoma has created a drought situation that becomes more serious with the approach of the planting season. The opposite condition has prevailed in the cotton area east of the Mississippi. One authority states that while the conditions of drought in Texas largely center the attention of the trade at present, as influencing the size of the new crop, probably the question of supply will soon become as important and that higher prices must come to restrict export and consumption, so that the carry-over may be a half million bales more than last season.

ARIZONA COTTON. Pimas are influenced completely by Sakel prices, the stock of this cotton on hand being mostly held by spinners. There will probably be a largely increased acreage this year in Arizona pimas.

EGYPTIAN COTTON. Sakels closed on February 11 at 69.85 but about the middle of the month reacted violently. The small supply of this cotton renders it subject to manipulations of speculators and prices may easily reach high levels or drop radically downward. New crop futures are practically 20 per cent cheaper than old crops in this growth.

Uppers, on the other hand, have been very firm and subject to small fluctuations. Thus far the demand has been chiefly for high grades and a considerable stock of medium and low grade Uppers still is available.

Cotton Fabrics

DUCKS, DRILLS, AND OSNABURGS. The market for February has not been active and during the past week has been very quiet. The requirements of the smaller rubber companies seem to be covered for March and April and the larger companies' needs up to July. No increase of buying is expected until the latter part of March or early in April. At the close of last month the market was reported as fairly active, with prices remaining firm.

RAINCOAT FABRICS. Prices have advanced the past month. Business in this trade is improving gradually; its volume, however, is quite small due to the uncertainty of determining what styles the trade will adopt. Most concerns have a very broad range of coats and seem to be doing a little on each number, but quantity business is lacking at this time.

SHEETINGS. The market is steady and firm. Buying is spotty. Most orders are small and for nearby delivery. Buyers are not disposed to place contracts for long future deliveries.

TIRE FABRICS. The market for tire fabrics has ruled generally inactive the past month. Early in February there was a moderate amount of inquiry. Fabric mills were operating on 80 per cent basis. Southern mills were working full time. The extreme rise in Egyptian cotton prices precluded them from practical interest. Recently there has been some revival of interest in their future fabric requirements on the part of Akron tire manufacturers. Prices of fabrics are reported unchanged.

New York Quotations

February 24, 1925.

Drills			
38-inch 2.00-yard	yard	$0.21½	@
40-inch 3.47-yard		.12¾	@
52-inch 1.90-yard		.23¼	@
60-inch 1.52-yard		.29	@
Duck			
38-inch 2.00-yard	yard	.23	@
40-inch 1.47-yard		.31½	@
72-inch 16.66-ounce		.54⅛	@
72-inch 17.21-ounce		.56	@
MECHANICAL			
Hose and belting	pound	.45	@
Specials		.49	@
TENNIS			
52-inch 1.35 yard	yard	.36	@
Hollands			
DEAD FINISH			
Standard, 37-inch	yard	.19½	@
42-inch		.23½	@
FLAT FINISH			
Imperial, 36-inch		.15½	@
40-inch		.17½	@
RED SEAL			
36-inch		.18	@
40-inch		.19	@
30-inch		.30	@

Osnaburgs			
40-inch 2.35-yard	yard	.19½	@
40-inch 2.48-yard		.18¾	@
40-inch 3.00-yard		.15½	@
37-inch 2.42-yard		.19	@
Raincoat Fabrics			
COTTON			
Bombazine 64 x 60	yard	.12¾	@
Bombazine 60 x 48		.11¾	@
Plaids 60 x 48		.12¾	@
Plaids 56 x 44		.12½	@
Surface prints 60 x 48		.13¼	@
Surface print 64x60		.14	@
Sheetings, 40-inch			
48 x 48, 2.50-yard	yard	.17	@
48 x 48, 2.85-yard		.14½	@
64 x 68, 3.15-yard		.14½	@
56 x 60, 3.60-yard		.12½	@
48 x 44, 3.75-yard		.11¾	@

Sheetings, 36-inch			
48 x 48, 5.00-yard	yard	$0.09	@
40 x 40, 6.15-yard		.07½	@
Tire Fabrics			
SQUARE WOVEN 17¼-ounce			
Egyptian, karded	pound	.70 @	.75
Peeler, karded		.50 @	.51
CORD 23/5/3			
Egyptian, combed	pound	.80 @	.85
Egyptian, karded		.70 @	.75
Peeler, combed, 1 1/16-in.	pound	.63 @	.65
Peeler, karded		.52 @	.53
CORD 13/3/3			
Peeler, karded	pound	.49 @	.50
LENO BREAKER			
8-oz. Peeler, karded	pound	.52 @	.53
10-oz. Peeler, karded		.52 @	.53
CHAFER			
8.25-oz. Peeler, karded	pound	.52 @	.53
9.5-oz. Peeler, karded		.52 @	.53
12-oz. Peeler, karded		.51 @	.52
14-oz. Peeler, karded		.51 @	.52

The Cotton Outlook

Planters Advised Not to Increase Acreage

THE annual outlook report of the United States Department of Agriculture advises cotton planters to follow about the same production program as last year but not to increase acreage. The outlook for cotton production in 1925, though perhaps less favorable than in 1924 from the standpoint of production costs, is otherwise encouraging. From present indications stocks at the end of the current season will not be large, foreign demand should be sustained, industry is in a liquidated condition, and cotton growers generally are in an improved financial position.

Consumption of American cotton during the season of 1924-25 will be considerably greater than that of last season, and although the carryover at the end of this season will be somewhat in excess of that from the 1923-24 crop it will not be burdensome. From the movement of the 1924 crop it may be inferred that the present season's supply of American cotton will be well enough digested to permit easy distribution of the 1925 crop. Exports to date have been much heavier than last year. European purchasers have been buying freely, and there is greater activity in the cotton mills in England and Germany than at this time last year. The stabilization of exchange has made it possible for European merchants to participate to a larger extent in the handling of the crop, and stocks in European ports, which for the past three years have been abnormally low, are now increasing.

Offsetting the strength in the export movement was the low consumption of American mills in the early fall, compared with the fall of 1923. But on the other hand the American industry seems to be fully liquidated, stocks of manufactured goods being much smaller than in the fall of 1923. Mill stocks of raw cotton are also less than last year. Consequently any increases in the consumer demand would be likely to be felt promptly in the movement of raw cotton, indicating that the season's large crop will be well absorbed. It appears that, assuming a continuance of business prosperity and barring unusual developments, the world could absorb at sustained prices a crop of American cotton in 1925-26 of twelve to thirteen million bales.

John A. Todd, the well-known cotton authority, very wisely states that it is too early yet to talk about the acreage for 1925, but asserts that previous experience justifies the assumption that a fall in the price of cotton from say 34 cents in December, January and February last year to an average of about 24 cents in December and January this season is pretty certain to lead to a reduction in acreage, although it must be remembered that the average yield per acre in 1924 was so much better than in 1923 that the actual economic yield of the crop to the planter was not so bad as is indicated by the fall in the average price.

World Cotton Crop Estimates Revised

Estimates of cotton production for Brazil, Peru and some minor countries, and revised estimates for Egypt, China, Russia and other regions have changed somewhat the estimated world total production for 1923-24 and 1924-25, the Department of Agriculture has announced. The possibility of a reduced crop in India is partially offset by the probability of a larger crop in Egypt than the 1,278,000 bales of 478 pounds given in the preliminary estimate of the Egyptian Government.

Cotton production of all countries reporting to date for 1924-25 now amounts to 23,366,000 bales of 478 pounds net, as compared with 19,044,000 bales for the same countries in 1923-24. These countries in 1923-24 produced 97.7 per cent of the estimated total world production which is now placed at 19,500,000 bales.

Provided all other countries produce amounts in 1924-25 equal to the crops of 1923-24, the total production for the current year would be 23,900,000 bales of 478 pounds. This figure includes the last estimate of 13,153,000 bales put out by the Crop Reporting Board for the United States.

Ginnings up to January 16 for the current crop amounted to 13,308,000 running bales, excluding linters, as compared with 9,944,000 running bales up to the same date last year, according to the Bureau of the Census, which would indicate a final report for 1924-25 somewhat larger than the present estimate.

Trying to Revive Sea Island Industry

Cotton breeders of the Department of Agriculture are undertaking to develop quicker fruiting strains of Sea Island cotton in the hope that this type of cotton may be grown again despite the boll weevil. Meantime the official standards for this type will be discontinued as practically none of it is now being grown. It is particularly susceptible to boll weevil devastation because of its slow fruiting habit and high moisture requirement. This cotton, formerly produced in the Sea Island belt of Florida, Georgia, and South Carolina, was for many years the finest grown in this country and much in demand for tire fabrics. In 1916 the crop amounted to 117,559 bales, but production decreased rapidly as the weevil invaded the district. In 1919 it had dropped to 6,916 bales; in 1923 to 785 bales, and none was reported in 1924.

Southern Mill Expansion

Clark's annual spindle increase list, which was recently published by the *Southern Textile Bulletin*, shows a total of 400,848 spindles installed by southern cotton mills during 1924, including 144,956 by North Carolina mills, South Carolina was second with 86,330 spindles, while Georgia installed 76,470. Announcements for 1925 embrace 370,428 spindles, of which 143,660 have been contracted for by North Carolina mills. Tennessee ranks second in this list with 93,000 spindles; Georgia, 44,000; Alabama, 32,000; South Carolina, 26,096.

The total number of spindles in the southern states has increased from approximately 13,000,000 in 1915 to more than 17,637,075 at the beginning of this year, the increase during the ten-year period being more than 4,500,000 spindles. The increase since 1900 is even more striking, from 5,731,894 to 17,637,075.

REPORT OF RIMS INSPECTED AND APPROVED DURING JANUARY, 1925

Rim Size	Number	Per Cent
Clincher:		
26 x 3	10707	0.6
28 x 3	300	0.0
30 x 3	11344	0.7
30 x 3½	697702	38.6
31 x 4	79236	4.7
Straightside:		
28 x 3½	177413	9.8
29 x 3½	38908	2.1
30 x 3½	96933	5.4
32 x 3½	2673	0.1
28 x 4	170599	9.4
29 x 4	68503	3.8
30 x 4	54799	3.0
31 x 4	1270	0.1
32 x 4	20405	1.1
33 x 4	1720	0.1
34 x 4	300	0.0
29 x 4½	31452	1.7
30 x 4½	72730	4.0
31 x 4½	32862	1.8
32 x 4½	85479	4.7
34 x 4½	6707	0.4
30 x 5	8626	0.5
31 x 5	53032	2.9
33 x 6	1535	0.1
Truck:		
30 x 5	48429	2.7
34 x 5	9493	0.5
32 x 6	13472	0.7
36 x 6	7092	0.4
34 x 7	1390	0.1
36 x 8	953	0.0
40 x 8	991	0.0
Totals	1,808,055	100.0

Overshoe Shortage Fault of Retailer

The overshoe shortage was felt again this winter, especially in the cities of New York and Philadelphia which were visited with an unusual amount of snowy and slushy weather. When one considers the exceptionally long shutdowns of the footwear mills last summer this loss of business seems preventable.

What is the answer? In the first place, probably not one half of the overshoes worn this winter were ordered from the manufacturers by December first. This situation was precipitated by the unusually mild winter last year, causing the retailer to delay placing future orders for this class of merchandise. Instead of following the usual custom, the retailers adopted the expedient of letting the manufacturer "hold the bag." They thought the manufacturers would make up a large stock without orders, or failing to do that, would be able to increase production suddenly when the demand came.

Such reasoning was fallacious because it did not take into consideration how overshoes are manufactured. Their production depends upon two very skilled classes of female labor, namely quarter makers, who make up the top, and gaiter makers, who build the shoes, both hand operations. These workers cannot be obtained on a moment's notice because they are scattered and become absorbed in other industries. Furthermore, the skill of the trade only persists when continually practiced. It takes an apprenticeship of over three months before learners are qualified to perform the operations.

Therefore when the rush hit the manufacturer as it did in 1919-20, 1922-23 and to a less extent in 1924-25, he did the only thing he could, namely, supplied his regular customers with fill-in sizes and let the others go without, much as he regretted to do it. No business today likes to pass up orders. If he had only had them last summer he could have produced quality goods, and supplied the demand.

All winter varieties of shoes are sold payable December 1, with discounts for anticipation, to enable the retailer to give his order early and afford the manufacturer time to make the goods and build them right. He need not make commitments for his entire requirements; all manufacturers carry a stock to fill in sizes on short notice, but they cannot supply an overnight demand with high class goods when they are obliged to rush them through with inexperienced labor.

Advance orders for 1925-26 are now being booked in good volume, but the rise in prices January 1 has made a demand for a cheaper class of merchandise. High wool prices reflected in jersey cloth quotations, and the crude rubber advance have made the raw material bill soar.

The cheaper gaiter for 1926 carries an all cotton cloth in place of worsted and an eiderdown cotton lining instead of the usual wool product. It meets adequately the demand for price merchandise, but whether the footwear mills will be as successful in maintaining quality with a cheaper article as the tire manufacturers were, will be answered by the consuming public next winter.

UNITED STATES IMPORTS OF CRUDE RUBBER DURING 1924 TOTALED 330,004 long tons, value $174,361,427. Reexports, mainly to Canada, were estimated as being 10,279 long tons, and the amount retained, or the consumption by American rubber manufacturers, totaled 319,725 long tons. Corresponding figures for 1923 are: imports, 309,139 long tons, value $185,057,739; re-exports, 8,772 long tons; and consumption, 300,367 long tons.

AN OUTPUT OF 3,000 TENNIS BALLS A DAY HAS NOW BEEN REACHED at the works of the Barnet Glass Rubber Co., Limited, Footscray, Melbourne, Australia. The demand is such that plans for the installation of an additional factory are under consideration.

Metal Market Review

New York

During the first three weeks of February there was comparatively little activity in any of the markets, with prices in some instances tending downward. Zinc however developed considerable strength, the market being quiet but firm.

ALUMINUM. There has been practically no change in prices for the past five or six months, although there have been more or less notable developments in every other non-ferrous metal.

ANTIMONY. Spot delivery of Chinese metal is exceedingly scarce. Consumption is apparently 300 tons monthly, whereas it is normally 800 to 1,000 tons.

COPPER. There has been another reaction in copper, and the market is weak, with little demand for export also. According to the American Bureau of Metal Statistics, the world production of copper in 1924 totaled 1,458,737 tons, against 1,356,196 tons in 1923.

LEAD. Demand for lead has been relatively better than that for other metals, but is mostly for prompt shipment. Consumption continues heavy, but the market is stronger in the Middle Western states than in the East.

NICKEL. Wholesale lots of shot and ingot nickel are quoted at 31 to 32 cents a pound, with electrolytic nickel quoted at 38 cents.

STEEL. The steel ingot output in January represented an increase of 13 per cent over the month previous, according to compilations by the American Iron and Steel Institute. The industry as a whole continues to operate at from 90 to 95 per cent of capacity, while mills in the Chicago district are still at 100 per cent, with good prospects. This production cannot however be maintained indefinitely, and some believe that the slowing down is not far distant.

TIN. The market remains quiet and without much change in values. This condition is said to be partly from sympathy with the other metals, particularly lead and copper.

ZINC. More interest in this metal developed during the latter part of February, and prices became a trifle higher. According to the American Bureau of Metal Statistics, the total output during 1924 of slab zinc by the important zinc producing countries reached 953,790 tons, as against 928,523 tons in the previous year.

Basic Metals

February 24, 1925

	Cents per pound
Aluminum, virgin, 98@99 per cent	27.00 @28.00
Antimony	18.50 @19.00
Copper—Lake, spot	14.875 @15.00
Electrolytic, spot	14.625 @14.750
Casting, refinery	14.125 @
Lead, spot, New York	9.25 @
Lead, spot, East St. Louis	9.00 @ 9.125
Nickel, ingot, pound	31.00 @32.00
Tin, spot	57.125 @
Zinc, spot, New York	7.925 @ 7.950
Zinc, spot, East St. Louis	7.575 @ 7.60

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSE

	Cents per pound
Bright basic	4.25 @ 4.50
Annealed soft	4.50 @ 4.75
Galvanized annealed	5.15 @ 5.40
Coppered basic	5.15 @ 5.40
Tinned soft Bessemer	6.15 @ 6.40

*Regular extras for lighter gage

Copper Wire

Base price F. O. B. factory

	Cents per pound
Bare copper wire	17.375 @
No. 6 B. & S. gage	17.375 @
No. 8 B. & S. gage	17.375 @
No. 14 B. & S. gage	18.375 @

DURING THE TWELVE MONTHS OF 1924 CUBA IMPORTED AMERICAN-made rubber belting to the value of $33,222; hose, $150,713; and packing, $112,965. This compares with corresponding figures for the entire year 1922 of $21,132, $79,461, and $56,409.

Exports of India Rubber Manufactures from the

EXPORTED TO	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Waterproofed Auto Cloth Value	Waterproofed Clothing Value
EUROPE													
Austria	.....	.....	.....	.....	393	$773	556	$686	534	$787	.....	.....	.....
Belgium	$3,499	$844	$682	$5,939	122	354	.....	.....	.....	.....	.....	$5,096	.....
Bulgaria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Czechoslovakia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	234	.....
Denmark	258	290	1,076	.....	5,712	13,545	11,087	11,178	9,150	19,475	$1,449	.....	.....
Finland	1,102	.....	.....	.....	.....	.....	.....	.....	.....	.....	295	.....	.....
France	3,551	470	2,103	44,351	266	1,034	1,104	624	.....	.....	113	902	$913
Germany	.....	.....	.....	24,164	6	18	2,498	2,962	4,438	6,018	634	51	224
Gibraltar	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Greece	.....	58	.....	.....	.....	.....	.....	.....	.....	.....	180	.....	.....
Hungary	.....	.....	538	.....	.....	.....	2,250	1,025	.....	.....	.....	.....	.....
Iceland and Faroe Is.	.....	.....	.....	.....	515	1,487	591	586	.....	.....	.....	.....	.....
Italy	.....	.....	25	13,672	1,164	3,398	2,180	2,009	264	357	.....	.....	.....
Latvia	375	.....	.....	.....	.....	.....	.....	.....	.....	.....	168	.....	.....
Malta, Gozo, and Cyprus Is.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	103	.....	.....
Netherlands	234	823	.....	.....	1,210	5,553	.....	.....	624	1,248	1,047	1,044	277
Norway	592	321	38	.....	872	1,907	1,632	1,257	1,160	1,059	.....	725	.....
Poland and Danzig	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portugal	.....	143	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rumania	.....	435	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spain	193	.....	.....	.....	12	30	984	441	.....	.....	.....	.....	.....
Sweden	2,291	1,022	154	1,400	820	1,994	24	34	.....	.....	1,153	479	.....
Switzerland	.....	.....	.....	.....	.....	.....	936	546	.....	.....	.....	.....	.....
Turkey in Europe	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
England	17,790	10,977	8,668	50,571	78,313	136,458	27,821	12,806	8,540	1,682	383	11,773	.....
Scotland	747	.....	88	.....	1,188	2,677	528	224	480	446	.....	.....	1,254
Ireland	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	681	.....
Yugoslavia, Albania, etc.	.....	.....	.....	.....	.....	.....	960	874	.....	.....	.....	.....	.....
TOTALS, EUROPE	$30,632	$15,383	$13,372	$140,097	90,593	$169,328	53,151	$35,252	35,190	$31,072	$5,525	$20,985	$2,668
NORTH AMERICA													
Canada	$11,212	$5,164	$4,635	$7,168	5,191	$12,385	16,344	$13,053	780	$766	$2,492	$21,139	$964
British Honduras	.....	.....	.....	.....	.....	.....	48	28	65	113	1,192	.....	.....
Costa Rica	30	111	56	.....	.....	.....	.....	.....	256	191	1,174	133	99
Guatemala	14	394	.....	.....	.....	.....	.....	.....	846	761	.....	83	107
Honduras	300	895	151	.....	.....	.....	24	24	798	727	1,804	.....	1,069
Nicaragua	214	502	162	.....	.....	.....	284	306	782	723	6	.....	76
Panama	.....	1,434	196	.....	72	272	.....	.....	4,983	3,702	337	.....	249
Salvador	.....	107	125	.....	.....	.....	180	120	888	539	4,935	.....	.....
Mexico	13,250	12,645	4,596	1,155	92	383	790	623	55,203	50,205	22,824	315	3,150
Miquelon & St. Pierre Is.	.....	.....	.....	.....	708	2,154	24	26	.....	.....	.....	.....	.....
Newfoundland & Labrador	677	444	27	.....	2,420	6,451	6,103	6,122	112	55	303	20	2,879
Bermuda	.....	75	49	.....	.....	.....	66	51	708	661	174	319	80
Barbados	.....	.....	23	.....	.....	.....	.....	.....	.....	.....	.....	220	.....
Jamaica	.....	209	72	.....	.....	.....	15	5	711	558	43	141	34
Trinidad and Tobago	110	80	630	.....	.....	.....	.....	.....	6,714	3,430	280	547	.....
Other Brit. West Indies	755	28	205	.....	.....	.....	.....	.....	3,313	4,383	.....	.....	69
Cuba	2,407	5,730	7,115	124	229	378	1,837	1,193	79,923	44,542	8,207	4,502	7,679
Dominican Republic	186	577	104	.....	.....	.....	.....	.....	10,396	7,303	352	631	859
Dutch West Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
French West Indies	.....	.....	.....	.....	.....	.....	48	50	11,885	8,768	309	.....	.....
Haiti	.....	101	105	.....	.....	.....	96	180	987	845	1,062	.....	30
Virgin Islands of U. S.	.....	.....	31	.....	.....	.....	.....	.....	717	695	.....	.....	.....
TOTALS, NORTH AMERICA	$29,155	$28,496	$18,282	$8,447	8,712	$22,023	25,859	$21,781	180,067	$128,967	$45,494	$28,050	$17,344
SOUTH AMERICA													
Argentina	$1,190	$4,541	$249	.....	937	$3,005	.....	.....	174,562	$111,227	$7,884	$22,141	$1,088
Bolivia	.....	130	.....	.....	.....	.....	.....	.....	.....	.....	156	.....	.....
Brazil	2,635	4,919	215	.....	56	124	1,519	$1,300	.....	.....	.....	5,130	510
Chile	13,736	4,834	294	.....	.....	.....	318	292	3,292	1,937	545	1,174	266
Colombia	1,666	2,960	622	.....	12	42	185	115	5,893	4,055	7,724	770	1,388
Ecuador	.....	1,137	488	.....	.....	.....	.....	.....	36	58	1,447	1,965	1,041
British Guizna	.....	.....	.....	.....	.....	.....	.....	.....	96	58	79	.....	.....
Peru	2,079	1,342	4,863	.....	18	91	.....	.....	552	576	289	459	1,536
Uruguay	.....	12	.....	.....	.....	.....	.....	.....	7,874	4,842	1,527	1,220	1,849
Venezuela	1,458	751	391	.....	.....	.....	.....	.....	.....	.....	1,579	387	763
TOTALS, SOUTH AMERICA	$22,764	$20,626	$7,122	.....	1,023	$3,262	2,022	$1,707	192,305	$122,753	$21,229	$33,246	$8,441
ASIA													
Aden	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Armenia and Kurdistan	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British India	$3,101	$777	$1,376	.....	.....	.....	106	$97	1,776	$1,433	.....	$439	.....
Ceylon	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	723	.....
Straits Settlements	1,358	.....	.....	.....	.....	.....	.....	.....	1,036	705	.....	120	$40
Other British East Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
China	38	513	466	.....	.....	.....	2,280	2,027	5,772	3,116	.....	4,711	30
Java and Madura	2,276	393	540	.....	.....	.....	42	65	3,932	6,724	$163	6,991	.....
Other Dutch East Indies	931	34	507	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
French Indo-China	.....	166	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hejaz, Arabia, etc.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hongkong	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Japan	408	9,308	5,490	$32,886	989	$2,463	2,664	2,206	15	30	.....	284	.....
Kwangtung, leased territory	7,458	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	489	.....
Palestine and Syria	.....	.....	.....	.....	.....	.....	.....	.....	42	40	.....	.....	.....
Philippine Islands	9,741	5,363	4,611	.....	.....	.....	.....	.....	48,570	33,535	101	2,567	886
Siam	.....	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, ASIA	$25,311	$16,565	$12,990	$32,886	989	$2,463	5,098	$4,395	61,143	$45,583	$264	$16,324	$956
OCEANIA													
Australia	$2,626	$4,678	$1,631	.....	48	$183	120	$84	384	$968	.....	$8,833	$180
British Oceania	.....	.....	.....	.....	.....	.....	.....	.....	271	311	.....	.....	41
French Oceania	.....	17	.....	.....	.....	.....	.....	.....	863	845	.....	.....	24
New Zealand	2,559	3,185	498	.....	.....	.....	.....	.....	240	220	$150	1,443	351
Other Oceania	27	.....	.....	.....	.....	.....	.....	.....	242	260	.....	.....	.....
TOTALS, OCEANIA	$5,212	$7,880	$2,129	.....	48	$183	120	$84	2,000	$2,604	$150	$10,276	$596

United States by Countries During December, 1924

Pneumatic Casings			Solid Tires		Pneumatic Tubes			Tire Repair Materials	Hard Rubber Goods			Rubber Water Bottles and Fountain Syringes	Other Druggists' Rubber Sundries	Bathing Caps	Rubber Toys, Balls and Balloons
Automobile			Automobile and Motor Truck		Automobile				Battery Jars and Accessories	Other Electrical Supplies					
Number	Value	Others Value	Value	Others Value	Number	Value	Others Value	Value	Value	Value	Others Value	Value	Value	Value	Value
					23	$141						$35	$32		
236	$3,844	$84			717	1,853		$306				323	692	$186	$2,201
517	9,927				20	28									
20	208				115	198		40							
138	1,803				1,891	2,515	$175	397			$9		2,861	238	162
3,736	40,488	1,636	$2,286		143	251		28							
143	2,450				1,647	6,962	28	869			16,353	1,392	2,068	322	
1,887	32,062		2,440		186	592	188					75	2,034		3,154
150	3,696	390													
					711	1,016		161			23		15		
83	989		4,904												
					34	47	15	57				360	810		103
131	1,921				188	282		144							
558	6,106	207			195	248					76				
134	1,431				123	196						492	165	248	3,831
354	3,723				301	712	144	458					513	94	371
776	9,047	200	606		556	899							300		
463	6,608		4,499									28			92
					172	338	22	83		$12					
113	1,674	122			125	365					182	182			338
83	1,700				2,196	4,920	69	1,465		42	361	299	718	710	361
1,959	34,169	195	10,522		344	688	29				4		567	54	414
1,857	30,809	154	2,727		287	1,395	52								
614	15,186	238	234		25	81									
					5,040	14,808	376	6,046	$1,566		39,282	5,496	11,011	1,411	31,572
11,458	145,854	649	25,402								338				1,978
595	5,855		1,087					198							
					75	113									
32	395														
26,037	$359,945	$3,875	$54,707		15,114	$38,648	$1,098	$10,252	$1,566	$54	$56,628	$8,682	$21,786	$3,263	$44,577
4,835	$35,799	$690	$2,342	$370	1,157	$1,994		$2,291	$16,804	$2,662	$16,515	$915	$9,354	$46	$4,165
9	142														40
65	1,041		39	54	66	114						72	96	19	700
105	1,491	120		74	158	320		12					55		
132	3,856		1,575		76	170					31	20	56		4,350
75	997	13	225		82	128					200	236	122	29	309
555	6,753		570	218	617	1,055		17				50	312	4	140
133	2,399		442		118	296		42				942	183	113	162
4,741	61,015	1,023	7,029	61	6,389	14,032	$259	2,555	50	419	1,281		3,778	54	7,289
													83		33
				552						26					
				49	73	102		58						49	
89	1,135		1,996	99	88	157		64					11		343
117	1,308		182		9	20								31	64
50	588			204	186	293		83			1,567	1,623	3,145		3,460
148	1,598			60	6,885	10,560	57	4,197			169		150		335
4,626	54,203	3,410	21,406		1,608	2,603		157					28		
1,776	20,685	68	2,997		374	580	19	32							
308	3,008	28	41		24	71	35								
206	2,766		97		332	586		59			78		32	3	
262	4,063				12	24									
44	492														
18,276	$203,337	$5,352	$38,941	$1,741	18,254	$33,105	$370	$9,567	$16,854	$3,107	$19,841	$3,858	$17,405	$348	$21,390
											$525	$973	$5,501	$207	$3,011
15,150	$126,847	$23	$24,102	$824	14,147	$18,160	$15	$5,023							325
43	600									$186	302	42	288		730
2,206	17,608		2,334		65	138		514		130	25		386		372
1,180	18,193		1,121	384	445	992		28			37	70	1,025	164	483
703	12,660		263	418	1,060	2,277	9	269					26		65
36	730				154	357									128
31	321		92		13	18						494	564		361
1,187	21,751	78	3,603		1,262	3,217		406				124	910		379
2,651	30,028		2,574		1,601	2,782				200	99	498	499		803
1,232	12,926	276			1,298	2,187		204							
24,419	$241,664	$377	$34,089	$1,626	20,045	$30,128	$24	$6,444		$516	$988	$2,201	$9,199	$371	$6,657
					130	$183					$262				
87	$791											$656	$223		$2,985
					1,248	2,040		$284							1,300
1,415	16,316	$173	$4,980	$5,428	544	2,256									268
1,024	14,126	86	1,704		336	532	$71								
596	6,987	270	2,271									108	577	$20	
					608	1,116	55	811				22		350	
862	10,868				67	303	35	442							
1,428	14,124	243	6,719	1,713	29	53									
20	351		629												386
					50	59									584
20	164								$99			305	3,158		
					1,502	1,738		307	88						
2,090	17,658		1,467								31		160		
2	30				437	1,104		225							
296	5,806				2,515	3,979	156	531	150		514	301	869	28	
4,402	53,882	378	5,583	3,407				26							
12,242	$141,103	$1,150	$23,353	$10,548	7,466	$13,363	$317	$2,626	$337		$807	$1,392	$4,987	$398	$5,523
												$409	$4,531		$1,763
11,308	$150,089	$3,143	$18,382	$950	2,557	$5,824	$8	$3,034	$707						
18	248				11	23									
2	46		748		39	41					$77	62	1,137	$113	605
2,042	27,317	1,984	15,384		2,423	5,156		3,172							
22	247														
13,392	$177,947	$5,127	$34,514	$950	5,030	$11,044	$8	$6,206	$707		$77	$471	$5,668	$113	$2,368

Exports of India Rubber Manufactures from the

EXPORTED TO	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Waterproofed Auto Cloth Value	Waterproofed Clothing Value
AFRICA													
Abyssinia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British West Africa	.....	$18	.....	.....	.....	.....	.....	.....	108	$347	.....	.....	.....
British South Africa	$14,531	11,163	$2,333	$99	1,624	$4,076	172	$296	1,426	2,458	$2,176	$1,083	$10,028
British East Africa	.....	.....	.....	.....	.....	.....	24	21	.....	.....	.....	301	.....
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	175	.....	.....
Egypt	33	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Algeria and Tunis	1,139	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Liberia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portuguese East Africa	1,161	572	178	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other Portuguese Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, AFRICA	$16,864	$11,753	$2,511	$99	1,624	$4,076	196	$317	1,534	$2,805	$2,351	$1,384	$10,028
GRAND TOTALS	$129,938	$160,703	$56,406	$181,529	102,989	$201,335	86,446	$63,536	462,239	$333,784	$75,013	$110,265	$40,033

Official India Rubber Statistics for the United States

Imports of Crude and Manufactured Rubber

	December, 1924 Pounds	December, 1924 Value	Twelve Months Ended December, 1924 Pounds	Twelve Months Ended December, 1924 Value
UNMANUFACTURED—*free*				
Crude rubber	39,152,044	$15,935,883	735,980,070	$174,244,917
Balata	85,980	46,686	1,038,376	568,456
Jelutong or Pontianak	557,012	48,709	13,809,583	1,237,100
Gutta percha	313,454	41,476	3,154,731	463,610
Guayule	61,800	10,790	2,959,983	522,806
Rubber scrap	2,241,078	54,827	12,167,633	417,046
Totals	62,411,368	$16,138,361	769,109,376	$177,453,935
Chicle—*dutiable*	1,511,639	$711,489	7,918,670	$3,970,540
MANUFACTURED—*dutiable*				
Rubber belting	42,311	$27,412	582,096	$397,867
Other rubber manufactures or substitutes for rubber	.....	83,386	.....	2,016,850
Totals	42,311	$110,798	582,096	$2,414,717

Exports of Foreign Merchandise

UNMANUFACTURED				
Crude rubber	2,044,159	$713,848	23,081,012	$6,055,187
Balata	39,520	24,868	476,200	290,285
Jelutong or Pontianak	.....	.....	.....	.....
Gutta percha and rubber substitutes and scrap	10,049	3,618	63,121	5,697
Totals	2,093,728	$742,334	23,620,333	$6,351,169
Chicle	.....	.....	129,683	48,305
MANUFACTURED				
Gutta percha and India rubber	3,643	$1,795	112,239	$47,523
Totals	3,643	$1,795	112,239	$47,523

Exports of Domestic Merchandise

MANUFACTURED				
India rubber				
Reclaimed	563,160	$60,652	5,458,157	$523,598
Scrap and old	3,029,025	132,287	21,451,849	838,891
Footwear				
Boots—*pairs*	102,989	201,335	680,346	1,591,772
Shoes—*pairs*	86,446	63,536	1,681,042	1,374,548
Canvas shoes with rubber soles—*pairs*	462,239	333,784	3,917,510	2,962,069
Druggists' rubber sundries, water bottles and fountain syringes—*number*	25,277	16,730	260,449	197,109
Other druggists' rubber sundries	48,754	59,250	688,548	828,488
Bathing caps—*dozen*	2,184	4,635	144,164	272,006
Hard rubber goods				
Battery jars and accessories	48,675	19,661	402,361	125,904
Other electrical supplies	2,899	3,677	122,679	89,939
Other hard rubber goods	47,761	78,341	475,224	603,592
Tires				
Pneumatic casings				
For automobiles—*number*	97,994	1,173,256	1,249,967	15,072,708
Others—*number*	4,493	16,236	49,402	194,255
Pneumatic tubes				
For automobiles—*number*	71,724	136,541	1,104,145	2,021,124
Others—*number*	2,296	1,893	46,188	40,724

MANUFACTURED Tires	December, 1924 Pounds	December, 1924 Value	Twelve Months Ended December, 1924 Pounds	Twelve Months Ended December, 1924 Value
Solid tires				
For automobiles and motor trucks—*number*	6,409	187,279	102,782	2,690,819
Others—*number*	66,892	14,865	1,167,303	291,465
Tire accessories	89,595	35,928	1,315,403	521,091
Belting	239,686	129,938	3,577,255	2,089,056
Hose	249,479	100,703	4,422,819	1,728,776
Packing	114,515	56,406	1,885,360	838,389
Soles and heels	239,184	75,013	2,511,285	823,022
Thread	153,283	181,529	1,240,462	1,378,907
Other rubber manufactures	395,905	187,201	4,365,461	2,551,965
Totals	.....	$3,270,676	.....	$39,650,217

United States Crude Rubber Imports by Customs Districts

CUSTOMS DISTRICTS	December, 1924 Pounds	December, 1924 Value	Twelve Months Ended December, 1924 Pounds	Twelve Months Ended December, 1924 Value
Vermont	42,658	$8,532	143,451	$21,852
Massachusetts	2,294,637	652,759	19,883,720	4,661,603
New York	54,181,905	14,681,859	682,516,603	161,884,596
Philadelphia	734,514	158,335	4,758,697	1,047,362
Maryland	705,680	157,628	10,555,464	2,156,890
Los Angeles	766,524	174,051	11,371,120	2,541,627
San Francisco	38,530	8,884	6,200,449	1,472,867
Oregon	44,800	9,739	832,940	153,478
Ohio	3,240	711	3,240	711
Washington	.....	.....	11,200	2,285
Colorado	261,856	69,799	1,092,046	252,341
Buffalo	.....	.....	33,227	5,937
Chicago	.....	.....	80,608	18,861
San Antonio	.....	.....	177,783	31,734
Hawaii	.....	.....	70	21
Totals	59,074,344	$15,922,297	737,660,618	$174,202,165

CHILE INCREASES IMPORTATIONS OF MECHANICAL RUBBER GOODS

Chile's purchases of American-made rubber belting reached for the twelve months of 1924 the high figure of $250,912 as compared with only $61,094, the total for the entire year 1922. The 1924 importations of hose and packing stood at $59,857 and $18,466 respectively, as against $81,606 and $6,141 for the year 1922. The March, 1924, purchase alone of rubber belting was estimated at $53,353.

ACCORDING TO *Commerce Reports* RUBBER AND RUBBER PRODUCTS imported into Canada during 1914 reached a value in Canadian money of $9,142,000. In 1923 the figure had risen to $9,916,000, and in 1924 to $12,421,000, the amount supplied by the United States in the latter year being $8,975,000. The total rubber importations from the United States are estimated for 1914 at 67.4 per cent, for 1923 at 68.9 per cent, and for 1924 at 72.2 per cent.

United States by Countries During December, 1924—(*Continued*)

	Pneumatic Casings			Solid Tires		Pneumatic Tubes				Hard Rubber Goods			Rubber Water Bottles and Fountain Syringes Value	Other Druggists' Rubber Sundries Value	Bathing Caps Value	Rubber Toys, Balls and Balloons Value
	Automobile			Automobile and Motor Truck		Automobile				Battery Jars and Accessories	Other Electrical Supplies					
	Number	Value	Others Value	Value	Others Value	Number	Value	Others Value	Tire Repair Materials Value	Value	Value	Others Value				
	8	$97	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	236	3,394	.....	.....	.....	782	$1,313	.....	.....	.....	.....	.....	.....	$7	.....	.....
	2,574	34,569	$288	$537	.....	4,195	7,310	$47	$785	$197	.....	.....	100	$205	$142	$1,246
	359	4,977	.....	224	.....	346	723	23	.....	.....	.....	.....	.....	.....	.....	.....
	189	2,903	.....	631	.....	74	220	.....	.....	.....	.....	.....	.....	.....	.....	.....
	135	2,078	67	283	.....	162	343	6	.....	.....	.....	.....	.....	.....	.....	60
	.....	.....	.....	.....	.....	.....	.....	.....	48	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	64	509	.....	.....	.....	115	149	.....	.....	.....	.....	.....	.....	.....	.....	.....
	63	733	.....	.....	.....	141	195	.....	.....	.....	.....	.....	19	.....	.....	43
	3,628	$49,260	$355	$1,675	.....	5,815	$10,253	$76	$833	$197	.....	.....	$126	$205	$142	$1,349
	97,994	$1,173,256	$16,236	$187,279	$14,865	71,724	$136,541	$1,893	$35,928	$19,661	$3,677	$78,341	$16,730	$59,250	$4,635	$81,864

United Kingdom Rubber Statistics

Imports

	December, 1924		Twelve Months Ended December, 1924	
UNMANUFACTURED				
Crude rubber				
From—	Pounds	Value	Pounds	Value
Straits Settlements	5,549,700	£367,082	59,825,200	£3,418,582
Federated Malay States	2,802,800	180,174	26,958,400	1,561,249
British India	952,200	61,565	8,603,400	498,927
Ceylon and Dependencies	2,243,800	142,830	20,875,000	1,208,358
Other Dutch Possessions in Indian Seas	459,600	35,270	2,851,600	174,336
Dutch East Indies (except other Dutch Possessions in Indian Seas)	883,500	55,892	14,244,100	805,209
Other countries in East Indies and Pacific, not elsewhere specified	143,900	8,638	1,023,600	58,992
Brazil	507,700	35,485	6,987,900	340,862
Peru	35,500	1,698	87,600	4,643
South and Central America (except Brazil and Peru)	2,800	199	175,600	9,072
West Africa:				
French West Africa	316,900	13,222	1,624,200	70,412
Gold Coast	17,300	1,187	188,000	8,891
Other parts of West Africa	126,200	7,019	895,600	39,782
East Africa, including Madagascar	36,300	2,551	780,200	39,572
Other countries	119,800	8,147	1,098,000	64,824
Totals	14,198,000	£920,959	146,218,400	£8,303,711
Waste and reclaimed rubber	733,000	9,436	4,839,200	53,539
Gutta percha and balata	1,170,900	176,358	9,572,400	1,295,705
Rubber substitutes	14,000	280	69,000	2,097
Totals	16,115,900	£1,107,033	160,699,000	£9,655,052
MANUFACTURED				
Boots and shoes...*doz. pairs*	25,655	£82,116	229,235	£524,640
Tires and tubes				
Pneumatic				
Outer covers	.....	337,178	.....	2,317,869
Inner tubes	.....	44,341	.....	406,897
Solid tires	.....	22,691	.....	312,379
Other rubber manufactures	.....	126,843	.....	1,396,363
Totals	.....	£613,169	.....	£4,958,148

Exports

UNMANUFACTURED				
Waste and reclaimed	731,800	£7,723	9,075,900	£90,155
Rubber substitutes	70,600	1,990	1,229,000	27,564
Totals	802,400	£9,713	10,304,900	£117,719
MANUFACTURED				
Boots and shoes...*doz. pairs*	14,148	£26,987	259,409	£411,920
Tires and tubes				
Pneumatic				
Outer covers	.....	174,441	.....	1,988,377
Inner tubes	.....	38,706	.....	400,293
Solid tires	.....	27,478	.....	351,545
Other rubber manufactures	.....	234,922	.....	2,935,783
Totals	.....	£502,534	.....	£6,087,918

Exports—Colonial and Foreign

	December, 1924		Twelve Months Ended December, 1924	
UNMANUFACTURED				
Crude rubber				
To	Pounds	Value	Pounds	Value
Russia	1,122,800	£83,293	2,024,700	£134,053
Sweden, Norway and Denmark	297,000	19,859	2,638,000	151,005
Germany	3,586,000	242,316	22,185,800	1,338,249
Belgium	450,000	28,275	4,635,300	255,981
France	4,502,600	310,469	33,077,600	1,859,931
Spain	196,000	14,304	1,074,300	63,351
Italy	1,338,900	98,029	10,435,900	592,353
Austria	2,600	261	255,400	14,114
Hungary	2,300	192	71,000	4,265
Other European countries	226,200	16,114	2,503,900	148,639
United States	5,527,300	374,903	86,463,200	5,080,939
Canada	628,200	43,181	5,365,400	328,694
Other countries	138,000	8,879	995,900	58,417
Totals	18,017,900	£1,240,075	171,726,400	£10,029,991
Waste and reclaimed rubber	1,100	35	73,100	1,431
Gutta percha and balata	54,200	6,438	849,300	89,120
Rubber substitutes	.....	.....	1,500	33
Totals	18,073,200	£1,246,548	172,650,300	£10,120,575
MANUFACTURED				
Boots and shoes...*doz. pairs*	256	£566	3,789	£7,684
Tires and tubes				
Pneumatic				
Outer covers	.....	20,661	.....	405,577
Inner tubes	.....	2,730	.....	36,441
Solid tires	.....	1,398	.....	22,996
Other rubber manufactures	.....	14,086	.....	78,511
Totals	.....	£39,441	.....	£551,209

Landings, Deliveries and Stocks in London and Liverpool as Returned by the Warehouses and Wharves During December

	Landed for Dec. Tons	Delivered for Dec. Tons	Stocks, December 31		
			1924 Tons	1923 Tons	1922 Tons
LONDON:					
Plantation	3,786	7,903	29,346	59,898	72,165
Other grades	1	2	93	83	134
LIVERPOOL:					
Plantation	†206	†365	†2,722	†5,909	†7,916
Pará and Peruvian	95	35	141	463	518
Other grades	..	37	74	210	348
Total tons, London and Liverpool	4,088	8,342	32,376	66,563	81,081

† Official returns from six recognized public warehouses.

Crude Rubber Arrivals at New York as Reported by Importers

Parás and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Cametá Cases
JANUARY 19. By "Francis," Brazil.					
Paul Bertuch & Co.	....	....	45	....	....
General Rubber Co.	160	19	62	....	35
L. Littlejohn & Co., Inc.	1,024	37	173	150	....
Meyer & Brown, Inc.	†1,056	....	....	....	....
Poel & Kelly, Inc.	635	48	266	129	....
FEBRUARY 1. By "Bernini," Brazil.					
Paul Bertuch & Co.	53	3	....	1	....
General Rubber Co.	354	15	163	123	**35
L. Littlejohn & Co., Inc.	250	....	....	35	....
Poel & Kelly, Inc.	62	....	217	163	....
FEBRUARY 2. By "Western World," Bolivia.					
Paul Bertuch & Co.	††164	....	....	....	....
FEBRUARY 17. By "Justin," Brazil.					
Paul Bertuch & Co.	89	....	....	903*	....
General Rubber Co.	269	13	60	40	88
L. Littlejohn & Co., Inc.	960	90	229	337	....
Meyer & Brown, Inc.	....	....	....	62	....

†Fine and medium. *Bags. ††Packages. **Includes 11 cases of mixed grades.

Plantations

JANUARY 17. By "Calchas," Singapore. — CASES

Fisk Rubber Co.	100
L. Littlejohn & Co., Inc.	6,760

JANUARY 17. By "West Mahomet," Far East.

Hood Rubber Co.	*71 pkgs.
L. Littlejohn & Co., Inc.	1,018

JANUARY 18. By "Eurylochus," Far East

Hood Rubber Co.	*166 pkgs.

JANUARY 19. By "Scythia," London.

Poel & Kelly, Inc.	123

JANUARY 21. By "American Banker," Europe.

L. Littlejohn & Co., Inc.	371
Vernon Metal & Produce Co., Inc.	24

JANUARY 23. By "City of Athens," Far East.

L. Littlejohn & Co., Inc.	457
Meyer & Brown, Inc.	793
Poel & Kelly, Inc.	615

JANUARY 23. By "Verbania," London.

Poel & Kelly, Inc.	346

JANUARY 26. By "Belfast Maru," Singapore.

Chas. T. Wilson & Co., Inc.	112

JANUARY 25. By "Ajax," Far East.

Baird Rubber & Trading Co., Inc.	1,516
General Rubber Co.	466
Hood Rubber Co.	*313 pkgs.
J. T. Johnstone & Co., Inc.	306
L. Littlejohn & Co., Inc.	9,266
Meyer & Brown, Inc.	874
Poel & Kelly, Inc.	6,065
Vernon Metal & Produce Co., Inc.	99
Vernon Metal & Produce Co., Inc.	*150
Chas. T. Wilson & Co., Inc.	717

JANUARY 26. By "Dacre Castle," Far East.

Baird Rubber & Trading Co., Inc.	613
Paul Bertuch & Co.	200
Fisk Rubber Co.	212
General Rubber Co.	4,062
Hood Rubber Co.	*351 pkgs.
J. T. Johnstone & Co., Inc.	68
L. Littlejohn & Co., Inc.	5,015
Meyer & Brown, Inc.	1,423
Poel & Kelly, Inc.	1,249
Vernon Metal & Produce Co., Inc.	383
Chas. T. Wilson & Co., Inc.	810

JANUARY 26. By "Kosmo," Far East.

Baird Rubber & Trading Co., Inc.	3,178
Baird Rubber & Trading Co., Inc.	*200
Paul Bertuch & Co.	250
Paul Bertuch & Co.	*5
Fisk Rubber Co.	266
General Rubber Co.	474
Hood Rubber Co.	*333 pkgs.
J. T. Johnstone & Co., Inc.	914
L. Littlejohn & Co., Inc.	6,050
Meyer & Brown, Inc.	2,330
Poel & Kelly, Inc.	7,582
Poel & Kelly, Inc.	*250
Vernon Metal & Produce Co., Inc.	195
Chas. T. Wilson & Co., Inc.	428

JANUARY 26. By "Manaar," Far East.

General Rubber Co.	560
Meyer & Brown, Inc.	1,192
Poel & Kelly, Inc.	642
Chas. T. Wilson & Co., Inc.	63

JANUARY 26. By "Minnetonka," Europe.

Baird Rubber & Trading Co., Inc.	500
General Rubber Co.	2,300
J. T. Johnstone & Co., Inc.	287
L. Littlejohn & Co., Inc.	1,772
Vernon Metal & Produce Co., Inc.	200
Chas. T. Wilson & Co., Inc.	1,041

*Arrived at Boston.

JANUARY 26. By "Salatiga," Far East. — CASES

Baird Rubber & Trading Co., Inc.	110
General Rubber Co.	1,192
Hood Rubber Co.	*733 pkgs.
J. T. Johnstone & Co., Inc.	365
L. Littlejohn & Co., Inc.	4,697
Meyer & Brown, Inc.	532
Poel & Kelly, Inc.	839
Chas. T. Wilson & Co., Inc.	450

JANUARY 27. By "Ansonia," London.

Poel & Kelly, Inc.	541

JANUARY 27. By "Laconia," Europe.

L. Littlejohn & Co., Inc.	11
Poel & Kelly, Inc.	93
Vernon Metal & Produce Co., Inc.	361

JANUARY 28. By "Maryland," London.

Hood Rubber Co.	*156 pkgs.
J. T. Johnstone & Co., Inc.	111
L. Littlejohn & Co., Inc.	50
Meyer & Brown, Inc.	51
Poel & Kelly, Inc.	232

FEBRUARY 2. By "Amatenga," Far East.

Meyer & Brown, Inc.	409
Chas. T. Wilson & Co., Inc.	38

FEBRUARY 3. By "Anniston City," Far East.

Baird Rubber & Trading Co., Inc.	676
General Rubber Co.	3,024
Hood Rubber Co.	*875 pkgs.
J. T. Johnstone & Co., Inc.	100
L. Littlejohn & Co., Inc.	4,088
Meyer & Brown, Inc.	656
Poel & Kelly, Inc.	1,664
Chas. T. Wilson & Co., Inc.	1,450

FEBRUARY 4. By "City of Madras," Far East.

Baird Rubber & Trading Co., Inc.	56
General Rubber Co.	1,250
Hood Rubber Co.	*211 pkgs.
L. Littlejohn & Co., Inc.	2,225
Chas. T. Wilson Co., Inc.	275

FEBRUARY 4. By "Sarcoxie," Europe.

L. Littlejohn & Co., Inc.	307

FEBRUARY 5. By "Yoseric," Far East.

L. Littlejohn & Co., Inc.	1,167
Meyer & Brown, Inc.	658
Poel & Kelly, Inc.	1,006

FEBRUARY 7. By "Mesaba," Europe.

L. Littlejohn & Co., Inc.	1,977

FEBRUARY 8. By "Valacia," Europe.

L. Littlejohn & Co., Inc.	76
Poel & Kelly, Inc.	304

FEBRUARY 9. By "Kathlamba," Far East.

General Rubber Co.	20
Hood Rubber Co.	*386 pkgs.
Poel & Kelly, Inc.	*750

FEBRUARY 9. By "Minnewaska," Europe.

L. Littlejohn & Co., Inc.	3,852
Meyer & Brown, Inc.	158

FEBRUARY 9. By "Nagato Maru," Far East.

Hood Rubber Co.	*127 pkgs.
L. Littlejohn & Co., Inc.	1,971
Meyer & Brown, Inc.	630
Chas. T. Wilson & Co., Inc.	56

FEBRUARY 9. By "Novian," Europe.

L. Littlejohn & Co., Inc.	107

FEBRUARY 10. By "Burgerdyk," Rotterdam.

Chas. T. Wilson & Co., Inc.	100

FEBRUARY 10. By "Caronia," Europe.

L. Littlejohn & Co., Inc.	341

FEBRUARY 10. By "Celtic," London.

Meyer & Brown, Inc.	120

FEBRUARY 11. By "American Trader," Europe.

L. Littlejohn & Co., Inc.	2,144

FEBRUARY 13. By "Bali," Far East.

Baird Rubber & Trading Co., Inc.	182
General Rubber Co.	2,789
Hood Rubber Co.	*138 pkgs.
L. Littlejohn & Co., Inc.	4,691
Meyer & Brown, Inc.	448
Poel & Kelly, Inc.	1,425
Vernon Metal & Produce Co., Inc.	63
Chas. T. Wilson & Co., Inc.	106

FEBRUARY 13. By "City of Boston," Far East. — CASES

General Rubber Co.	224
J. T. Johnstone & Co., Inc.	623
L. Littlejohn & Co., Inc.	2,340
Meyer & Brown, Inc.	658
Poel & Kelly, Inc.	990
Chas. T. Wilson & Co., Inc.	112

FEBRUARY 13. By "President Monroe," Far East.

L. Littlejohn & Co., Inc.	2,233
Meyer & Brown, Inc.	918

FEBRUARY 13. By "Sutton Hall," Far East.

General Rubber Co.	1,000
J. T. Johnstone & Co., Inc.	35
L. Littlejohn & Co., Inc.	2,258
Meyer & Brown, Inc.	1,054
Poel & Kelly, Inc.	807
Vernon Metal & Produce Co., Inc.	56
Chas. T. Wilson Co., Inc.	310

FEBRUARY 14. By "Moorish Prince," Far East.

Baird Rubber & Trading Co., Inc.	2,782
Baird Rubber & Trading Co., Inc.	*100
General Rubber Co.	1,548
Hood Rubber Co.	*314 pkgs.
J. T. Johnstone & Co., Inc.	92
L. Littlejohn & Co., Inc.	6,336
Meyer & Brown, Inc.	1,737
Poel & Kelly, Inc.	2,806
Poel & Kelly, Inc.	*260
Vernon Metal & Produce Co., Inc.	425
Chas. T. Wilson & Co., Inc.	1,790

FEBRUARY 16. By "Nakasa Maru," Far East.

Meyer & Brown, Inc.	224

FEBRUARY 17. By "Antonia," London.

Meyer & Brown, Inc.	1,543

FEBRUARY 17. By "Doric," Liverpool.

Meyer & Brown, Inc.	155

FEBRUARY 17. By "London Commerce," London.

Chas. T. Wilson & Co., Inc.	263

FEBRUARY 17. By "Oanfa," Far East.

Baird Rubber & Trading Co., Inc.	895
General Rubber Co.	593
J. T. Johnstone & Co., Inc.	200
Meyer & Brown, Inc.	1,414
Poel & Kelly, Inc.	480
Vernon Metal & Produce Co., Inc.	100
Chas. T. Wilson & Co., Inc.	1,122

FEBRUARY 18. By "City of Rangoon," Far East.

Baird Rubber & Trading Co., Inc.	540
General Rubber Co.	195
Vernon Metal & Produce Co., Inc.	*100
Vernon Metal & Produce Co., Inc.	150

FEBRUARY 18. By "Lancastria," London.

Vernon Metal & Produce Co., Inc.	115

FEBRUARY 18. By "Silver Pine," Singapore.

Baird Rubber & Trading Co., Inc.	101
General Rubber Co.	3,441
Vernon Metal & Produce Co., Inc.	140
Chas. T. Wilson & Co., Inc.	907

Africans

JANUARY 19. By "Scythia," Europe. — CASES

L. Littlejohn & Co., Inc.	2,616

FEBRUARY 4. By "Sarcoxie," Bordeaux.

Poel & Kelly, Inc.	10

Guayule

JANUARY 14-FEB. 10. By "Railways," Mexico.

Continental Rubber Co.	3,500

Balata

	Cases
JANUARY 19. By "Francis," Manáos.	
Paul Bertuch & Co.	5
JANUARY 22. By "Nickerie," Paramaribo.	
Middleton & Co., Ltd.	6 bales
FEBRUARY 3. By "Paria," French Guiana.	
Middleton & Co., Ltd.	34 bales
FEBRUARY 17. By "Justin," Iquitos.	
Paul Bertuch & Co.	64

Gutta Percha

	Cases
FEBRUARY 14. By "Moorish Prince," Far East.	
Poel & Kelly, Inc.	12

Maniçobas

JANUARY 27. By "Castilian Prince," Brazil.	
Adolph Hirsch & Co., Inc.	75 bales

Rubber Latex

	Cases
JANUARY 26. By "Dacre Castle," Far East.	
General Rubber Co.	263,773 lbs.
FEBRUARY 3. By "City of Anniston," Far East.	
General Rubber Co.	202,080
FEBRUARY 17. By "Silver Pine," Far East.	
General Rubber Co.	215,759

Rubber Statistics for the Dominion of Canada

Imports of Crude and Manufactured Rubber

	November, 1924		Eight months Ended November, 1924 April-November	
	Pounds	Value	Pounds	Value
UNMANUFACTURED				
Rubber, gutta percha, etc.,				
From United Kingdom	85,874	$25,866	3,338,147	$866,378
United States	2,934,172	885,259	15,252,487	3,681,594
Belgium	.....	.....	50,122	11,393
Ceylon	.....	.....	.....	.....
Straits Settlements	.....	.....	1,329,819	287,415
Dutch East Indies	.....	.....	78,474	19,855
France	.....	.....	.....	.....
Netherlands	.....	.....	.....	.....
Other Counries	.....	.....	.....	.....
Totals	3,020,046	$911,125	20,049,049	$4,866,635
Rubber recovered	215,056	24,180	1,589,331	151,958
Rubber powdered and rubber or gutta percha scrap	132,509	7,159	2,581,795	90,599
Balata	790	570	3,525	2,765
Rubber Substitutes	25,709	3,902	519,223	140,294
Totals	3,394,110	$946,936	24,742,923	$5,252,251
PARTLY MANUFACTURED				
Hard rubber sheets and rods	28,331	11,512	128,062	59,287
Hard rubber tubes	.....	1,673	.....	9,820
Rubber thread not covered	9,755	10,519	55,586	59,228
Totals	38,086	$23,704	183,648	$128,335
MANUFACTURED				
Belting	.....	10,023	.....	113,586
Hose	.....	7,477	.....	80,062
Packing	.....	2,373	.....	27,637
Boots and shoes....*pairs*	13,326	14,578	107,917	107,381
Clothing, including waterproofed	.....	12,097	.....	113,000
Gloves	.....	1,102	.....	10,285
Hot water bottles	.....	1,024	.....	5,680
Tires, solid.....*number*	1,158	3,203	5,453	52,913
Tires, pneumatic ..*number*	4,006	40,367	37,544	436,899
Inner tubes.....*number*	3,226	6,243	22,750	53,617
Elastic, round or flat	.....	21,973	.....	168,008
Mats and matting	.....	1,725	.....	13,161
Cement	.....	2,325	.....	29,959
Other rubber manufactures	.....	113,628	.....	1,036,259
Totals	.....	$238,138	.....	$2,248,447
Totals, rubber imports	.....	$1,208,778	.....	$7,629,033

Exports of Domestic and Foreign Rubber Goods

	November, 1924		Eight months Ended November, 1924 April-November	
	Produce of Canada Value	Re-exports of Foreign Goods Value	Produce of Canada Value	Re-exports of Foreign Goods Value
UNMANUFACTURED				
Crude and waste rubber	$16,879	.....	$60,457	.....
Totals	$16,879	.....	$60,457	.....
MANUFACTURED				
Belting	$30,903	.....	$273,577	.....
Canvas shoes with rubber soles	170,118	.....	1,260,919	.....
Boots and shoes	124,071	.....	570,107	.....
Clothing, including waterproofed	794	.....	18,998	.....
Hose	18,603	.....	105,215	.....
Tires, casings	477,201	.....	3,548,931	.....
Inner tubes	87,462	.....	591,400	.....
Pneumatic	.....	.....	.....	.....
Solid	22,112	.....	133,028	.....
Vehicle	.....	.....	.....	.....
Other rubber manufactures	34,807	$18,111	219,608	$91,508
Totals	$966,071	$18,111	$6,721,783	$91,508
Totals, rubber exports	$982,950	$18,111	$6,782,240	$91,508

Plantation Rubber Exports from Dutch East Indies

Java and Madura

	October		Ten months ended October	
	1923 Kilos	1924 Kilos	1923 Kilos	1924 Kilos
To—				
Holland	195,000	163,000	2,507,000	2,915,000
Great Britain	542,000	424,000	4,650,000	5,649,000
Germany	12,000	47,000	300,000	317,000
France	15,000	1,000	424,000	251,000
Belgium	10,000	11,000	10,000	25,000
Italy	22,000	25,000	244,000	314,000
Canada	.....	4,000	54,000	4,000
United States	1,739,000	2,115,000	16,735,000	22,902,000
Singapore	80,000	171,000	1,283,000	2,321,000
Hongkong	.....	.....	.....	27,000
Japan	25,000	10,000	234,000	697,000
Australia	6,000	4,000	170,000	243,000
Totals	2,646,000	2,975,000	26,701,000	35,665,000
Tandjoengpriok	1,153,000	1,144,000	10,933,000	13,707,000
Tjerebon	.....	.....	68,000	56,000
Samarang	194,000	214,000	1,896,000	2,561,000
Sourabaya	973,000	1,205,000	10,157,000	14,309,000
Pasuruan	85,000	42,000	917,000	1,045,000
Probalingga	63,000	61,000	600,000	1,007,000
Panarukan	38,000	138,000	962,000	1,220,000
Banjuwangi	105,000	100,000	749,000	808,000
Tjilatjap	33,000	70,000	419,000	951,000
Belawan-Deli				
Holland	178,000	91,000	1,550,000	1,461,000
Great Britain	736,000	554,000	3,170,000	4,013,000
Germany	30,000	15,000	190,000	293,000
France	55,000	.....	257,000	236,000
Belgium	.....	.....	204,000	27,000
Italy	23,000	5,000	249,000	222,000
United States	2,608,000	2,919,000	21,540,000	24,755,000
Singapore	138,000	89,000	2,003,000	802,000
Straits Settlements	.....	.....	152,000	.....
Penang	55,000	140,000	475,000	843,000
Australia	.....	3,000	1,000	20,000
Other countries	5,000	8,000	14,000	127,000
Totals	3,828,000	3,824,000	29,895,000	32,799,000

Java and Madura

	November		Eleven Months Ended November	
	1923 Kilos	1924 Kilos	1923 Kilos	1924 Kilos
To—				
Holland	153,000	191,000	2,660,000	3,106,000
Great Britain	429,000	700,000	5,079,000	8,617,000
Germany	6,000	42,000	306,000	359,000
France	14,000	2,000	438,000	253,000
Belgium	7,000	.....	17,000	25,000
Italy	20,000	24,000	264,000	338,000
Canada	.....	.....	54,000	4,000
United States	2,785,000	1,933,000	19,520,000	24,835,000
Singapore	98,000	65,000	1,381,000	2,386,000
Hongkong	.....	.....	.....	27,000
Japan	74,000	54,000	398,000	751,000
Australia	15,000	4,000	185,000	247,000
Totals	3,601,000	3,015,000	30,302,000	38,680,000
Tandjoengpriok	1,606,000	1,208,000	12,539,000	14,915,000
Tjerebon	10,000	17,000	78,000	73,000
Samarang	205,000	219,000	2,101,000	2,780,000
Surabaya	1,460,000	998,000	11,617,000	15,307,000
Pasuruan	125,000	182,000	1,042,000	1,227,000
Probalingga	46,000	198,000	646,000	1,205,000
Panarukan	94,000	114,000	1,056,000	1,334,000
Banjuwangi	15,000	45,000	764,000	853,000
Tjilatjap	40,000	34,000	459,000	985,000
Belawan-Deli				
Holland	163,000	113,000	1,713,000	1,574,000
Great Britain	599,000	887,000	3,769,000	4,900,000
Germany	5,000	118,000	195,000	411,000
France	147,000	12,000	404,000	248,000
Belgium	.....	.....	204,000	27,000
Italy	82,000	.....	331,000	222,000
United States	3,106,000	2,854,000	24,646,000	27,699,000
Singapore	156,000	50,000	2,249,000	852,000
Straits Settlements	.....	.....	152,000	.....
Penang	79,000	114,000	554,000	957,000
Australia	.....	4,000	1,000	24,000
Other countries	10,000	3,000	24,000	130,000
Totals	4,347,000	4,155,000	34,242,000	36,954,000

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